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ORIGINAL ARTICLES.

A CONTRIBUTION TO THE STUDY OF THE SYMPTOMS OF CHRONIC URETHRITIS.

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The fact that a patient observes a persistent or occasional drop at the meatus, by no means proves that gonorrhea exists. On the other hand, the absence of discharge does not exclude the presence of chronic gonorrhea. This fact alone warrants a detailed study of the symptoms of this disease.

At the outset, it is well to say that no attempt at considering the urethrites in general is made. To extend this paper to the urethrites of a non-gonorrheal character would expand it beyond its intended dimensions. Moreover, the urethrites, other than gonorrheal, merit exhaustive study by themselves.

The separate consideration of gonorrhea infecting the region before or behind the compressor is due, like the vast majority of other advances in the study and treatment of genito-urinary diseases, to the great master, Felix Guyon.[1] This division into anterior and posterior urethritis is not only rational, but also the most convenient.

In most cases the symptoms of this disease vary according to the region affected; an effort will here be made, in studying them, to place them where they belong. But while attempting this, it will be found that there are symptoms which may show affection of either urethra. To recite these separately would encumber us with a new division. It seems better to adhere to Guyon's classification and, while using it, to mention wherever applicable the local differentiation, so important in treatment.

SYMPTOMS OF CHRONIC ANTERIOR GONORRHEA.

1. *Agglutination of the meatus.*—Some cases present, as the sole symptom of urethral disease, a mere cohesion of the meatus, most frequent on arising from sleep. This may take the shape of a slight, transparent pellicle or a crust formed by the dried discharge. When the discharge is so copious as to prevent its drying, it takes the shape of the morning drop, to be discussed farther on. It is important to ascertain, microscopically, whether the substance that even but agglutinates the meatus is the result of a diseased condition, or whether it indicates merely an increased normal secretion, due to erection during sleep. A particle of the "glue," pellicle or crust, rubbed with a drop of distilled water upon a cover-glass, will prepare it for examination. But one such microscopic examination by no means suffices for diagnostic purposes. For some reason the specimen taken one day may contain only mucus or perhaps urethral epithelium; while the substance that causes the lips of the meatus to adhere but slightly may after several examinations be found to contain gonococci.

2. *The discharge*, like the agglutination, is often the only symptom which the patient observes. Its appearance and persistent reappearance, even without any accompanying inconveniences, harass him. It is difficult, without detailed study, to reach conclusions which will justify the physician in assuring the patient regarding the danger or innocuousness of this discharge.

3. *Description of the discharges.*—With a view to systematizing the description of urethral discharges, I beg to submit the following classification. While it is by no means exhaustive, I think it has the advantage of carrying a definition in each title: 1, thick bloody discharge; 2, thick green discharge; 3, thick yellow discharge; 4, thick white (creamy) discharge; 5, thick rice-water (grayish, opaline) discharge; 6, thick watery discharge.

The above discharges may vary or be mixed as regards consistence. Any of them may be thin, carrying thicker drops; they may also be mixed as regards color; thus, there may be a greenish-yellow discharge, or a yellowish-white one, etc.

When the discharge does not flow freely from the meatus, it may be present as, *a*, the morning drop (small, medium or large), varying from a dirty gray even brownish tint to the colorless appearance of raw egg-albumin; *b*, an excess of moisture, easily expressible from the meatus by stripping the urethra; *c*, an excess of moisture expressible *to* the meatus; *d*, an excess that can not be expressed, but remains within the meatus and is visible only on opening its lips.

4. *The abundance of the discharge* may vary in the same individual. In most cases of chronic urethritis, it presents only in the morning before the first urination (*goutte militaire*). In others it becomes evident an hour or two after urination. In others still, it appears only occasionally, as after fatigue, dissipation, the abuse of stimulants, etc.

5. *Color of the discharge.*—The morning drop especially may be creamy or yellow, or it may be grayish or opaline, or colorless.

6. *Consistence of the discharge.*—The discharge, drop, or mere excess of moisture in chronic gonorrhea may be as fluid as that of an acute specific urethritis; it may also be coherent, slimy and easily drawn out into long threads when taken between the fingers.

7. *Stains on garments.*—Very many patients see the sole evidence of disease in stains on their shirts. And indeed, when they or their physicians endeavor to strip from the urethra some more of the discharge

[1] Guyon: Leçons Cliniques sur les Maladies des Voies Urinaires.

that produces these stains, they succeed in bringing only a slight excess of transparent moisture *to* the meatus, but not expressible from it. Often these stains produce in the patient a greater disquietude than the discharge did, when it was evident. Such patients use all possible means to impress upon the physician the presence of the stains. It is nothing unusual to have a patient bring quite a laundry package for ocular demonstration. One of my cases wore his shirt a whole week, examined it almost hourly, and whenever he found a drop, encircled it with indelible pencil ring and marked it with the date and hour at which he discovered it. It is not rare to have a patient cut the stained portion from the shirt and attach it to labels, giving the above data.

8. *Relation between stains and discharge.*—When drops are discharged from the urethra, the stains on the garments bear a color-relation to the urethral discharge. As Diday has shown, a colorless drop gives the shirt a starch-like stain; an opaline drop gives the shirt a grayish stain; a white drop gives the shirt a yellow stain; a yellow drop gives the shirt a green stain.

9. *Urine stains* are sometimes confounded with the stains from urethral discharge. To recall their gross differences, I tabulate them as follows:

URINE STAINS.	STAINS FROM URETHRAL DISCHARGE.
Irregularly shaped; diffuse.	Circular or ovoid.
Large, with undefined edges.	Small, with sharply defined edges.
Color of same shade throughout.	Center darker than periphery.

10. *Diagnostic value of stains from urethral discharge.*—While excellent authors, *inter alia* Guiard,[2] do not attach very great importance to the stains from urethral discharge, these certainly merit attention. Thus the deeper in color and the greater in density a stain, the greater the likelihood of its containing gonococci; yet, a very light, starchy stain by no means excludes them.

11. *Microscopy of the stains on linen.*—When, for any reason, the patient can not be examined personally and it is necessary to prepare these stains for the microscope, it may be done by moistening the spot with distilled water, rubbing it upon a cover-glass and then drying, fixing, staining and mounting in the usual manner.

In many cases the discharge is so slight that it will not stain the linen. Then several hours must elapse before sufficient of the discharge accumulates to become at all evident in the meatus. Or it may be so small in quantity that stripping of the urethra is required to reveal its presence. In such cases the patient may not perceive it except after a night's rest, when it appears as the

12. *Morning drop (goutte militaire).*—This may show itself as a mere light drop of a pearly grey color, or through all the gradations to a very heavy, thick yellow drop. In some cases it does not take the form of a drop, but dries upon the lips of the meatus, slightly agglutinating them or, if the quantity be larger, may seal them with a thick crust. To obtain the drop for microscopic examination the patient must be examined before he has passed his first morning urine. When this can not be done, he must be provided with cover-glasses, and instructed in catching the drop.

[2] Les Uréthrites Chroniques chez l'homme. 1898.

13. *Absence of discharge* does not prove that the patient is cured. What is called "latent gonorrhea" (Guiard, *Annales*, 1884) may exist, especially in the posterior urethra, with no symptoms whatever, except as manifested by filaments, flakes or granules in the urine. I believe "residual gonorrhea" a more correct term for this condition. The "floaters" found in the first morning urine should be fished therefrom with a sterilized platinum loop and examined microscopically. If they can not be thus obtained, the urine may be centrifuged and the sediment examined.

14. *Absence of "floaters"* may not prove a cure either. *Ramonage* may then be advantageously employed with the other methods for determining the condition of the urethra, as described in another paper.[3]

15. *Itching or tickling* within the urethra, is one of the most annoying symptoms of chronic urethritis. It is especially aggravating when the symptom obtains in the posterior urethra. It is then often referred to the rectum. Such cases are subjected to all manner of treatment, even operations upon the anus and rectum, of course without relief. The reflex nervous symptoms resulting from this urethral itching or tickling, not infrequently drive the patient to desperation. In some cases the diseased area is so minute that its location is difficult even with the urethroscope. In extremely small infected spots, or perhaps a single one, it may not be found at all. Fortunately the vast majority of cases yield to dilatation and irrigations.[4] In those few which persist, the urethra is prepared by this treatment, for more searching urethroscopy, until the diseased region can be brought to view.

16. *Painful urination* is not frequent in chronic gonorrhea, except when the patient has rendered the urine abnormally irritating by dissipation, or increased the local disturbance in the same manner by coitus or over-exertion. These may also reproduce the discharge or aggravate it, if present. Equally a meatus agglutinated, or sealed with a dried discharge, may render urination painful. The inflamed canal is distended to a painful degree, until the agglutination is torn away by the force of the stream. The tearing of the incrustation from the meatus carries with it superficial and sometimes deeper epithelium, producing at first pain alone and later ulceration of the meatus, until every attempt at urination is as exquisitely painful as it was in the beginning of acute gonorrhea. This can be avoided by teaching the patient to soak the meatus in a hot boric acid or very weak bichlorid solution, before urinating. The urine in chronic gonorrhea presents symptoms of import in both anterior and posterior infection of the organ and may be considered with the latter.

17. *The urethroscopic symptoms* of chronic anterior and posterior gonorrhea can not well be studied separately. And indeed they require, for their proper comprehension, an essay devoted to them. The only concise article on the subject that at present exists in English, as far as my knowledge goes, is the brilliant paper by H. R. Wossidlo.[5]

18. *The urethrometic findings* of chronic anterior gonorrhea merit investigation in a paper limited to the diagnosis of the disease.

[3] Valentine: "The Proofs of Cure in Gonorrhea." Clinical Recorder, April, 1898.

[4] Valentine: "Chronic Gonorrhea: its Scientific Treatment." Clinical Recorder, January, 1898.

[5] Wossidlo: "Practical Urethroscopy," Medical Record, September 7, 1895.

I have in the preceding endeavored to sketch the symptoms most frequent in chronic anterior gonorrhea. In doing so, I hope that the statement be not taken too strictly, as almost any of the symptoms can be simulated by disease of the posterior urethra.

There are also a number of symptoms which can not be separately studied; these will therefore be associated with consideration of

THE SYMPTOMS OF CHRONIC POSTERIOR GONORRHEA.

Posner[6] hopefully says that acute posterior urethritis can heal without any special, and particularly without any local, therapeutics. This is fortunately true. Still, in view of the fact that 33 per cent. (Guyon and Jamin) to 85 or 92 per cent. (Ambert, Erand, Hassler, Jadassohn Letzel, Audry) of anterior gonorrheas traverse the compressor and infect the posterior urethra, it will not be well to envelop ourselves too firmly in what too often proves fancied security. Indeed it seems not remote that many of the sad results of residual gonorrhea are due to the fact of its lying unobserved in the posterior urethra, waiting, perhaps years, for the fitting occasion to become manifest. The comparative difficulty with which the posterior urethra ordinarily can be reached, may leave many cases unobserved until much later, when the most eccentric manifestations may suggest that it once was infected. Indeed, this infection in the acute stage may have been so insidious, as to be barely manifest, so that, to quote Guiard,[7] it may have been chronic at the very outset (*chronique d'emblee*).

19. *Discharge.*—The discharge in chronic posterior gonorrhea is exceedily variable. It may be so slight as to escape detection. Indeed there are cases in which the only gross evidence of infection of the posterior urethra is shown by shreds in the urine. If the patient's attention has not been attracted to them, their presence may be learned only when the physician examines the urine in quest of explanation for some other disease.

20. *Sudden large stain.*—Guyon and Jamin were the first to describe this symptom. It appears as a sudden large drop, with or without partial sensations of a slight ejaculation. Its stain upon the linen differs from the spots made by chronic anterior urethritis, in being much larger; when dried it usually has a whitish-yellow center, and becomes lighter colored and starchy toward the margins. Sometimes a stain of this character becomes evident to the patient only from its moisture. Not long since I had a patient who could, perhaps as a result of training, expel such a drop at will.

The presence of a large stain upon the linen may be accompanied by smaller drops, as described before. They would then evidence both chronic anterior and posterior gonorrhea, if on examination, the spots of both dimensions contain gonococci. There is no reason why another form of urethritis may not affect the anterior urethra, while the posterior is the seat of chronic gonorrhea, and *vice versa*. The explanation of the sudden large staining drop, as it escapes from the posterior urethra, is not very simple. The compressor being the anterior boundary of the posterior urethra, is a much stronger muscle than the sphincter vesicæ, which barely separates the urethra from the bladder. It is perhaps the presence of a heavier, thicker accumulation than the urine, in the posterior urethra, that stimulates the compressor to relax and the acellerator to expel the substance. This must be coincident with too little urine in the bladder to overcome the sphincter. But the absence of this large drop, for the reason above given, is more frequent than its presence. The sphincter is more apt to yield than the compressor. Consequently when the accumulation in the posterior urethra is sufficient to be appreciable by it, the contraction of the region is more likely to throw it into the bladder. It then may be ejected with the first urine and convey the erroneous impression that a healing anterior urethra is the site of the disease. To obviate such misapprehension, the anterior urethra should be carefully washed before allowing the patient to urinate. The first urine, after the washing, will then carry the pathologic secretion of the posterior urethra, provided it be not too small and tenacious to be dragged along with the stream.

21. *Stains as evidence of spermatorrhea.*—A considerable number of patients, misled mainly by the publications of quacks, interpret the spots of chronic anterior or posterior gonorrhea as evidence of spermatorrhea, with all the horrors it is made to portend to them. In all cases, especially where the patient is threatened with sexual neurasthenia in consequence, it may be well to demonstrate microscopically the absence of spermatozoa from the harassing spots. Undeniably spermatorrhea may occasionally be coincident with chronic posterior urethritis and be provoked by it. But as the supposed spermatorrhea usually yields with the cessation of urethritis, or shortly thereafter, the patient may be safely reassured.

22. *A dry meatus*, as before indicated, may coexist with very copious pathologic secretion in the posterior urethra. Indeed, the entire anterior urethra may prove healthy, under urethroscopic examination, while large drops of discharge my be propelled from the posterior urethra, simulating a series of "*petites éjaculations*" as Guiard calls them.

23. *Supposed incontinence of urine.*—Some patients seek advice for inability to hold the urine, while they control it perfectly. They point to the stains on their shirts for confirmation of this diagnosis. It require but little experience to distinguish the purulent circular stains from the diffuse stains of urine.

24. *Apparent defecation—or urination—spermatorrhea.*—A fairly large number of patients observe a thick, whitish drop either within or escaping from the meatus, during or after defecation, or at the end or urination. It is easy to understand how the final contractions of defecation or urination may force from the posterior urethra such secretion as was not carried off by the stream of urine. The microscope will decide whether the drop is due to chronic posterior urethritis, seminal vesiculitis, prostatorrhea or spermatorrhea.

25. *Apparent anterior urethritis.*—Occasionally cases present simulating chronic anterior gonorrhea, by an almost continual discharge, containing gonococci. If the anterior urethra is carefully washed and then examined with the urethroscope, it will be found in perfect health. Holding the tube's distal extremity close to the sphincter, pus will be seen welling into it, sometimes in sufficient quantity, if the Oberlaender urethroscope is used, to extinguish the light. I saw a case where the manifestations were so characteristic of anterior urethritis that the practitioner who brought him feared to use intravesical irrigations lest he might thereby infect the posterior urethra.

[6] Posner: Therapie der Harnkrankheiten, Berlin, 1895.
[7] Guiard: Les Uréthrites Chroniques, Paris, 1898.

Parenthetically I may say here, that this has never occurred. On urethroscoping the anterior urethra, it proved to be perfectly normal. The region of the compressor, however, bulged forward and slight pressure of the tube against it caused so large an extrusion of thick whitish discharge that it filled about one-third of the tube, suggesting a seminal emission. On examination this proved to be mainly pus, thoroughly loaded with gonococci. Under intravesical irrigations of potassic permanganate, this case soon recovered. The fact that such a chronic posterior gonorrhea can exist without infecting the anterior urethra, is doubtless attributable to a species of perhaps temporary immunity acquired by the gonorrhea, which was extended into the posterior urethra.

In view of the preceding, this manifestation of chronic posterior urethritis is not difficult of explanation. But when the discharge is very small in quantity and very tenacious, as in

26. *Chronic residual posterior gonorrhea*, without even the characteristic pain after urination, the only evidence thereof may be found in the shreds, filaments, flakes, etc., in the urine.

27. *Disturbances of ejaculation* are not infrequent accompaniments of very prolonged chronic posterior urethritis. Among these those most often found are

28. *Apparent aspermia.*—The patients so affected experience only a very slight or no sensation of the flow of semen through the urethra. On withdrawal for visual confirmation of the sensation, they find that nothing comes from the meatus. In such cases, the semen, instead of being vigorously ejected from the urethra, flows into the bladder and is carried off with the next urine. In several cases of this kind the patients confessed to a former habit of digital compression of the urethra, at the moment of venereal spasm, to avoid impregnation. One of these (a physician) claimed that he had acquired the power of compelling the semen to flow into the bladder, but after a gonorrhea had lost all ability to eject semen normally forward.

29. *Post-coital seminal dribbling.*—In some cases the semen is partially or entirely retained within the posterior urethra, and dribbles from the meatus upon cessation of the erection. This symptom is more frequent in urethritis ex libidine, than in chronic posterior urethritis.

30. *Painful ejaculations.*—In those not due to the ejaculatory spasm drawing upon nerve terminals compressed in infiltrations of the anterior urethra, the pain may be due to irritation of the chronically inflamed posterior urethra, just as urine, the normal stimulant to vesical contraction, gives pain in cystitis, and as light, the normal visual stimulant, gives pain in iritis. These painful ejaculations, however, are by no means essentially of gonorrheal origin. In character, they may be lancinating, burning, extending from the meatus to the rectum, or radiating to the testicles and lasting some time after coitus, which may be followed by scalding on urination. They are most frequent in excesses, such as are likely to be committed by middle-aged men in sexual relations with very young women. The most aggravated case in which painful ejaculation was the exclusive symptom of chronic anterior and posterior gonorrhea, was that of an otherwise normal man, who screamed at the moment of ejaculation and fainted before entire conclusion of the act. Usually the patients with chronic anterior urethritis complain of no pain during ejaculation, or only a slight burning. When the pain is sharp, lancinating, stabbing and extends to the region of the anus or rectum, chronic posterior urethritis is probably associated with disturbance of the anterior urethra and with or without involvement of the seminal vesicles or prostate, or both.

31. *Painful erections.*—These are comparatively rare when accompanied by sufficient genesic impulse to overshadow the pain. But there are cases in which erections without sexual desire are provoked by the presence of the chronic localized inflammation; they then stretch the tense areas or draw upon them, producing exquisite pain, while increasing the inflammation. Many a man has mere mechanical erections from an overfilled bladder. When the urethra harbors a chronic gonorrhea, the erections are, as a rule, more or less painful. They subside, however, as soon as the bladder is emptied.

32. *Excessive sexual desire.*—Another symptom, which, however, does not belong solely to chronic urethritis, but to affections of the prostate and vesicle as well, is what some patients call a "teasing" or "nagging" of the genesic apparatus. It urges a wish for coitus with partial erections, or only a slight swelling of the penis, or none at all. It is much akin to those localized troubles, as a long prepuce or tight meatus or other irritation which lead children to masturbation. These erections present mainly at night or on awakening. While the excessive sexual desire is evident principally during the day, it often disturbs sleep. In both conditions bromide of soda, bromide of potassium, or bromide of camphor in full doses will palliate the annoyance, but unless attention is paid to the patient's general condition, and unless his local affection is treated, they are of no avail.

33. *Premature ejaculations* frequently occur when chronic posterior urethritis has ceased to furnish other external manifestations. They may be so marked as to cause the patient to ejaculate, when his penis merely touches the external female genitalia. In extreme cases even accidental brushing against any part of a woman's garments, will cause an ejaculation, even without partial erection, or suggestion of sexual desire.

34. *Seminal emissions* are not infrequent in chronic posterior urethritis. In those cases due to abstinence from sexual intercourse they may occur once, twice, even thrice a week, and not be followed by any mental or physical disturbances. But if they recur several times in the same night, they are likely to become independent of sensual thoughts or dreams and then merit serious consideration.

35. *Urethral pains*, extending to the neighboring organs in some cases, even down the inner surface of the thighs, are not infrequently associated with chronic posterior gonorrhea. They generally occur independent of urination, but may be aggravated during ejaculation.

36. *Sexual neurasthenia* not infrequently supervenes in cases affected with chronic posterior gonorrhea. The seriousness of aggravated forms of what has grown into an essentially neuropathic condition merits separate study, such as has been given to it by Beard, who invented the term.

37. *The urine* yields symptoms of chronic gonorrhea, which might more properly be considered in a study of urinalysis. But the macroscopic findings are such that the patients soon learn them and attach importance to them beyond their real merit.

I propose here to merely outline those which are useful in common, rapid office-work. Ordinarily the patient is asked to urinate into two glasses, usually conical, not unlike sherry glasses. Guyon[8] directs attention to the need of a preliminary thorough cleaning of the meatus, lest the urine contain the results of balanitis or the abundance and diversity of foreign bodies, that may be carried with it. He enumerates mineral dust, coal, wool, silk, linen, hemp, cotton, threads, bits of hair, feathers, grains of starch, etc. The first and second urine obtained as above, is in a measure inconvenient, and liable to yield false impressions. To overcome these I suggested, some three years ago, that large test-tubes be used in place of the conical glasses. They proved too fragile, however, for rapid office and dispensary work. I therefore substituted 12-inch ignition tubes. These give a column of urine equal in all parts, easy to handle, especially in those macroscopic examinations that are most frequently employed. Moreover, they are very convenient for transference to centrifugal glasses, to test tubes and to microscopic cover-glasses. Guyon[9] devotes 365 pages to pathologic modifications of the urine; other authors have written volumes upon the subject. Hence, to attempt to more than glance at the most superficial macroscopic evidences of disease would be impossible in a paper like this. And in doing so, heed will be given only to those symptoms which attract the patient's attention.

38. *Malodorous urine.*—This is frequently the first symptom which patients observe. It sometimes has a fishy odor in chronic posterior urethritis and in tumors of the bladder, an excessively aromatic odor after taking balsams (*e.g.*, santal oil); a violet-like odor—almost a perfume—after taking turpentine preparations, etc.

39. *Turbid urine.*—If the first urine is turbid it is generally accepted as evidence of anterior urethritis. This, however, is open to error, as mentioned in another portion of this paper, in connection with a consideration of posterior gonorrhea simulating anterior gonorrhea. If washing out the anterior urethra produces only clear wash-water and the first urine then passed is turbid, disease of the posterior urethra is fairly well established. If all the urine passed is turbid, it may be due to an inflammatory disease of any part of the urinary tract, except the anterior urethra, whose pus is generally washed away with the first 150 centigrams of urine.

40. *Dhomé's test.*—If the turbidity is caused by pus, the addition of a saturated solution of caustic potash and then twirling the tube, will soon provoke that ropy separation which Dhomé, who devised the test, called "snotty." This forcible term (rotzig) has, as far as I know, not yet found a more elegant and equally descriptive English substitute.

41. *If bacteruria* causes the turbidity, caustic potash will not separate the clear urine, as above described.

42. *Phosphaturia* can show the urine just as turbid as in either of the preceding conditions. A little nitric, hydrochloric or acetic acid will, especially after boiling the urine, clear it with the formation of bubbles, causing it to resemble champagne. This excess of phosphates may accompany the act of digestion, especially in dyspeptics; it may follow mental exertion, anger, fright or apprehension; it is almost always present in prostatic enlargement.

[8] Maladies des Vois Urinaires, Tome I, p. 263. [9] Op. cit.

43. *Perfectly clear and brilliant urine* by no means proves absence of disease. Centrifuging the specimen may reveal slight but positive evidence that some part of the urinary apparatus is affected.

44. *Shreds, flakes, filaments, granules in the urine* are the symptoms which bring patients to us, long after other manifestations of disease have passed. Roughly these substances found in clear urine or in urine not so turbid as to conceal them, become smaller with the approach to restoration to health.[10] With Guyon (*Maladies des Voies Urinaires*) and Guiard (*Les Uréthrites Chroniques*), I deem the following general classification of these substances carried in the urine the most convenient for general practical purposes:

PURULENT FILAMENTS.	MUCO-PURULENT FILAMENTS.	MUCOUS FILAMENTS.
Short.	Very much longer.	Uniformly transparent.
Multiple.	Less numerous, often have ends rolled into a ball, or are serpentine.	. . . . .
Opaque. Yellowish.	Not homogenous, but often consist of thicker spots held together by a more transparent substance.	No opaque spots.
Fall rapidly to bottom; dissolve readily and increase turbidity.	Sink slowly and remain coherent a long time. By twirling the tube they can be made to rise from bottom.	Light; remain in the upper part or float on surface of the urine.
Easily removable from the urine with platinum loop.	More difficult to "fish" as proportion of pus diminishes.	Still more difficult to fish.
Easily spread upon cover-glass; no tendency to curl.	Tendency to roll into a thick slippery heap or serpentine mass upon cover-glass.	Tendency to roll into a clear, thick mass on cover-glass, where it dries very slowly and then is barely recognizable.
Microscopically: Large masses of leucocytes, few epithelial cells, no mucus.	Microscopically: Leucocytes, often with equal quantity of altered epithelial cells, englobed in a substratum of mucus.	Microscopically: Never exclusively mucus; always have some epithelial cells, often also a few leucocytes.

In the above comparative table, constructed for easy reference, I intentionally omit all mention of microbes. The coarsest shreds, which quickly drop to the bottom, may be free from gonococci, while the finest mucous filament may contain distinct groups.

In a general way, all that precedes applies to the urine in chronic anterior gonorrhea; but it is mentioned here because it is most convenient to examine both the first and second urines together. When manifestations point beyond doubt to chronic anterior gonorrhea alone, the first urine is usually considered without preliminary washing of the anterior urethra. But when doubt obtains, every effort should be made for proper differentiation.

45. *Washing the anterior urethra.*—Commonly, the patient having been instructed to come in the morning before he has urinated, the meatus is cleansed with cotton soaked in mercuric bichlorid 1-6000 and a sterilized, small soft catheter is introduced as far as the compressor. Hot boric acid 4 per cent. is injected through this catheter, until the solution that escapes along its sides is perfectly clear of even the finest granules. This washing with the catheter is perhaps the safest for those practitioners who have not much experience in the method which I find more convenient and efficacious. It consists in washing the anterior urethra without a catheter, as described elsewhere.[11] Naturally, in employing the irrigator, care must be taken that none of the wash-fluid

[10] Valentine: "Chronic Gonorrhea; its Scientific Treatment." Clinical Recorder, January, 1898.
[11] Valentine: "Improvements in Urethral and Intravesical Irrigation," Medical Record, June 5, 1897.

be injected into the posterior urethra, whose contents may be diluted thereby or have added to them the abnormal secretions of the anterior urethra. This vitiation of the test is more easily obviated by employing the irrigator I now use and recommend. The anterior urethra being thoroughly washed, the patient is instructed to pass his first 50 c.c. of urine into one tube and the remainder into another or others. If the first urine so passed is turbid, has coarse or fine shreds, filaments, flakes or granules, and if the subsequent urine is clear, the diagnosis of posterior urethritis, in the majority of cases, may be considered established.

46. *Turbid second urine.*—Even when the first urine passed after the cleansing of the anterior urethra is clear, the absence of posterior gonorrhea is by no means proven. The morbid secretion may be so slight and so adherent to the posterior urethra, as to render it not detachable by the urinary stream. The urethroscope is then the only means we have to determine the location of the disease.

Further consideration of these questions is relegated to a paper on the "Diagnosis of Chronic Gonorrhea," now in preparation. Even cursory attention to the preceding shows that nothing beyond an elementary study of the most salient symptoms of chronic gonorrhea has been contemplated. This may appear, at first, as an unwarrantable consumption of the time of this learned body. Yet, even among the best informed, symptoms are often hastily passed over as if familiarity with them had reduced their importance. My principal motive, I unhesitatingly confess, is to provoke a discussion which will doubtless be so instructive, as to fully repay me for the labor I devoted to this effort.

The large number of subjects touched upon makes it seem convenient to index them for rapid reference. The figures attached to the titles correspond to those in which they are mentioned.

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242 West 43d Street.

CHRONIC PROSTATITIS AND ITS TREATMENT.

Presented to the Section on Surgery and Anatomy at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY H. R. WOSSIDLO, M.D.

BERLIN, GERMANY.

So many mooted questions still envelop chronic prostatitis that its presentation, especially in a necessarily brief paper, is attended with considerable difficulty. The symptoms, too, are so readily confounded with those of other ailments, save by most searching study, that oftentimes a patient with chronic prostatitis is treated for all manner of other diseases, unsuccessfully. To contribute what I can, in the time at my disposal, to the better comprehension of the disease is the task I have set myself in this paper.

The more or less severe tickling and burning in the urethra or at the glans, either incessantly or at intervals, the often increased frequency of micturition, the aching and stabbing pains in the anus, sacrum or perineum, the pain in the suprapubic region as well as the radiating pain along the lumbar region and the legs are well-known manifestations of chronic prostatitis. I hardly need mention the often present uneasy feeling or even painful sensation along the inguinal canal and in the testes, nor will it be necessary to describe the various nervous symptoms of neurasthenic origin in consequence of a chronic prostatitis.

However, it may be useful to emphasize the fact that the variety of symptoms arising from chronic inflammation of the prostate do not in every case point directly to the local affection, but on the contrary very often obscure the real nature of the disease, and may cause the original trouble to be overlooked. Another cause of this error is the similarity of the symptoms of chronic prostatitis to those of posterior urethritis. This, in a great measure, explains the wide differences that prevail regarding the frequency of chronic prostatitis. While, for instance, Erraud observed prostatitis in 70 per cent. of all cases of gonorrhea, and Posner as well as Finzer mentions the frequent occurrence of the disease, Fürbinger and others are of an opposite opinion. Lately, however, the attention of physicians has been drawn more closely to this question and observations of a larger number of cases are reported by Petersen, Neisser, Felecki, Fuller, Berkeley Hill, etc.

My own practice has convinced me that acute and chronic prostatitis could be diagnosed much more frequently if in every case of acute, subacute or chronic gonorrheal urethritis the patient's prostate were examined. Of course, I do not mean to say that in every case of acute or chronic gonorrhea the prostate must be affected. Considering the close connection of the prostate with the posterior urethra and also that the ducts of the prostate open into the same, it is easily understood how an inflammation of the posterior urethra can extend into the prostatic gland. But we meet with cases of prostatitis and seminal vesiculitis without any apparent inflammation of the

posterior urethra. It is supposed that in such cases an accidently discovered chronic prostatitis has been chronic from the very beginning without having passed through an acute stage. It seems more likely that in such cases the infecting agents, the gonococci, did not rest long enough in the deep urethra to produce inflammation thereof, or that they did not find a suitable medium in the posterior urethra to grow upon, but wandered directly into the prostate.

The beginning of the acute prostatitis may be so mild, in such cases, as to cause no particular trouble to the patient, whose whole attention is directed to the more intense suffering from his acute anterior urethritis. Only after subsidence of the acute anterior do the symptoms of posterior trouble make themselves felt. Small wonder then that the physician overlooks the latter disease, unless he make it a rule to examine the prostate in every case.

Bacteriologically, also, the nature of the prostatic inflammation has been questioned. Finger in 1893 declared it indicated whether acute or chronic prostatitis is caused by an infection, by gonococci or a mixed bacteria. Neisser (German Dermatological Congress at Breslau, 1894) published several examinations he and Putzler had made, in which they found gonococci in the prostatic secretion. This has been confirmed by several other authors, and I can but endorse it. Although not always present, and although it is by no means easy to discover gonococci in the prostatic secretion, especially in chronic prostatitis, yet now and then we can detect some, as demonstrated several times in my post-graduate courses.

The text-books give as causes of chronic prostatitis: sexual excess, masturbation, gout, the internal use of balsams and traumatisms. I do not deny the existence of chronic prostatitis after such accidents, but I believe that that they are very rare, and that the principal etiologic factor is gonorrhea. I am sure that in many fresh cases ascribed to one of the above mentioned causes, a still existing chronic urethritis could be detected if a urethroscopic examination had been made.

A symptom considered as being characteristic for chronic prostatitis is prostatorrhea, that is an either constant or a periodical oozing of prostatic fluid from the urethra. We find this opinion in most of the text-books. In conformity with Felecki of Budapest[1], and with Grosglick of Warsaw[2], I found free prostatorrhea, *i. e.* a continual flow of prostatic fluid very rarely in cases of chronic prostatitis. I believe that urethrorrhea—an innocuous mucoid secretion from the urethral glands—and spermatorrhea are in such cases mistaken for prostatorrhea.

Defecation-prostatorrhea and urination-prostatorrhea, are terms employed to designate a flow of prostatic fluid following defecation or micturition. They are by no means as frequent as is generally supposed, still their existence can not be denied.

The general explanation for this symptom is in the pressure of hard feces against the prostatic gland and abdominal pressure in defecation or micturition. Another very probable view of its cause is given by Felcki. According to his opinion, the act of defecation and micturition, by providing an irritation to the inflamed and hypersensitive prostate, leads to the contraction of its muscular fibers, by which the prostatic fluid is expelled, as in coitus. It must, therefore, be borne in mind that chronic prostatitis may exist and often is present without prostatorrhea.

Another symptom worth mentioning is not so generally known as being one of chronic prostatitis; it is the dribbling of urine after micturition. Several minutes after having urinated the patient feels drops of urine running from his urethra; this dribbling repeating after every micturition. Such patients have a sensation as if their bladder had not been entirely emptied; they shake the penis a long time after urination or try to squeeze the urine from the urethra by stripping the perineum to protect the clothes from the dribbling urine.

The same dribbling of urine (harnnachträufeln) is observed in cases of urethral stricture and hypertrophy of the prostate. We must consequently exclude stricture before we make a chronic prostatitis responsible for it. This symptom must not be confounded with incontinence or with ischuria paradoxa. In incontinence the urine dribbles involuntarily, the bladder never being filled, while ischuria paradoxa designates the overflow of the bladder in cases of stricture or prostatic hypertrophy. In our cases the dribbling of the urine seems to be caused by impaired function of the musculus compressor urethræ. According to Ultzmann, the compressor, being irritated by the inflammation, remains for a time in contraction, which prevents the entire emptying of the last drops of urine. These flow off as soon as the spasm subsides. Peyer, on the contrary, explains this "nachträufeln" by a weakness of the compressor muscle preventing the timely shutting off of the urethral lumen at the end of micturition.

I mention the great frequency of nervous troubles as a sequel of chronic prostatitis. The more or less constant uneasy or painful sensations along the genito-urinary tract constantly draw the patient's thoughts to this region. Should he then, in addition to his disagreeable sensations, observe a degree of sexual weakness, incomplete erection or premature seminal emission, our patient's spirit becomes depressed. He is constantly worrying over his illness and loses all capacity for mental or physical work. In the worst cases general nervous debility sets in, not infrequently increasing to more or less complete exhaustion. Our patients become more or less obstinate hypochondriacs. It would be impossible to go into the details of all the nervous troubles complicating chronic prostatitis; they belong to the large group of neurasthenia sexualis. However, it must be understood that a great many patients suffer from such nervous disturbances without any affection of the prostate, and that others again with pronounced chronic prostatitis never show any nervous symptoms at all. The physician should make it a rule to examine every neurasthenic for chronic gonorrhea and chronic prostatitis.

We diagnose chronic prostatitis by examination of the prostate per rectum and by microscopic examination of the prostatic secretion. Rectal palpation of the prostate is done either in the recumbent position or by placing the patient with his abdomen over the head of a sofa or supported by pillows over the side of the bed with the shoulders depressed and the legs slightly apart. Care should be taken that the bladder is empty, otherwise an erroneous impression may easily be formed.

The patient being in the proper position, the index

[1] Felecki: Beiträge für Kenntniss und Therapie der Entzündung der Prostata und der Samenblüschen,—Cbl. für die Krank. der Harn. u. Sexualorgane, 1895, p. 468.

[2] Monats. berichte über die Gesammt. leistungen auf dem Gebiete der Krankheiten der Harn. und Sexual-Apparates,—Bd. ii, 3, 4, 5,

finger is gently introduced into the rectum and first glides softly over each prostatic lobe, determining its size and the character of its surface. Gradually a slight pressure on the prostate is made with the object of expressing some prostatic secretion for microscopic examination. The prostate will be found more or less irregularly enlarged. In some cases both lobes are irregularly enlarged and more or less painful to the touch; as a rule, however, one lobe is more affected than the other. The enlarged lobe may appear to be hard and of a more or less even surface, or of an irregular shape, presenting distinct nodules. This we find mostly in cases of follicular prostatitis, while an even, hard and smooth surface of an enlarged lobe is mostly due to a chronic interstitial inflammation; either one entire lobe may be soft and uneven, permitting the finger to be pressed deep into it, or we detect soft, easily impressible patches in both lobes, surrounded by somewhat harder tissue. The pain produced by the examination varies in intensity, some patients bearing a strong pressure comparatively easy, others complaining bitterly at the slightest touch.

A diagnosis of prostatitis can not be considered complete unless the prostatic secretion is examined microscopically. In cases without urethral or vesical complication we examine the prostatic secretion obtained by a gentle massage of the gland immediately after the patient has emptied his bladder. If in such cases, however, the quantity of the prostatic fluid is too small to appear at the meatus, it will mostly remain in the posterior urethra or flow backward into the bladder. In such a case we let the patient urinate into two glasses and ask him to keep some of his urine in the bladder. After massage of the prostate, the patient is ordered to empty the rest of his urine, which will contain the prostatic fluid.

It is much more difficult to obtain prostatic fluid *per se* in cases still complicated with urethritis or cystitis. It will then be necessary to exclude all substances coming from the mucosa of these organs. In complicating urethritis anterior we therefore wash the urethra with a catheter introduced to the bulb, with sterilized water or a boracic acid solution until the water or the solution contains no more pus or filaments, etc. We then order the patient to urinate and squeeze out the prostate after he has emptied his bladder. In case of a coexisting posterior urethritis or cytsitis, we first carefully wash the posterior urethra or bladder after urination until our solution passes off quite clear. After having filled the bladder again with our solution we let the patient urinate it out, either partly or all of it. This is followed by a massage of the prostate.

The prostatic fluid so obtained very often shows macroscopic changes indicating an existing prostatitis. The discharge is very profuse, turbid, mucopurulent or purulent; in other cases, its macroscopic aspect differs very little from normal prostatic secretion. The decision as to the nature of the secretion is given by the microscope. According to the severity of the inflammation pus cells are found in varying quantities in the secretion. The discovery of pus cells in the prostatic secretion places the diagnosis of a chronic prostatitis beyond all doubt. Besides leucocytes we find the microscopic specimens to contain cylindric cells in large quantities. Some cases of chronic prostatitis, present but few leucocytes in the secretion; these cells may be very abundant, indicating a desquamative catarrh of the prostate. Red blood corpuscles are also occasionally found. According to Fürbringer, the spontaneous formation of seminal crystals in the secretion, without previous addition of phosphate of ammonia, is of diagnostic value for chronic prostatitis.

It has been mentioned above that gonococci may be found in the prostatic secretion; their discovery in the microscopic specimens demonstrating the gonorrheal origin of the disease. With regard to a differential diagnosis between chronic prostatitis and other genito-urinary diseases, we must exclude the following: 1. Urethrorrhea ex libidine. 2. Spermatorrhea. 3. Chronic posterior urethritis. 4. Other diseases of the prostate itself, especially prostatic tuberculosis. Urethrorrhea ex libidiæ produces a mucoid secretion from the urethra, which the patients may often take to be prostatic fluid or spermatic juice. Microscopic examination will readily show the harmless nature of this secretion and its origin; consisting mostly of mucous containing only a few pavement epithelium or cells. The abundance of spermatozoa in the secretion will easily permit the diagnosis of spermatorrhea. The difficulty of a differential diagnosis arises only when we find pus cells are mixed with the sperma. In such cases the pus may come from a seminal vesiculitis or from a diseased prostate. An examination of the semen will assist us. The latter usually appears in the urine in the form of gelatinous globules resembling sago and consisting exclusively of spermatozoa and epithelial cells from the seminal vesicles. In seminal vesiculitis these gelatinous corpuscles contain leucocytes. If leucocytes are found in the prostatic secretion alone and not mixed with semen, we diagnose prostatitis; but if, on the other hand, leucocytes are found in both secretions, we diagnose a seminal vesiculitis and leave the diagnosis of prostatitis *in dubio*.

In such doubtful cases rectal examination will often materially assist us. We find the diseased vesiculæ seminalis as elongated swellings beyond the prostate, smooth, round, fluctuating and painful to the touch or more or less hardened and nodular. I refer for particulars to Fuller's paper on "Seminal Vesiculitis," read before the New York Academy of Medicine, Section on Genito-Urinary Diseases, meeting of May 9, 1893.

The differentiation of chronic posterior urethritis and chronic prostatitis can easily be made by following the above-described plan for obtaining the prostatic secretion, after irrigation of the posterior urethra. Furthermore, urethroscopic examination will readily set aside all doubt. The differentiation between chronic prostatitis and tubercular prostatitis is of the greatest importance. It is not always easy to distinguish between a tuberculosis of the prostate in its beginning and a chronic prostatitis, especially as the prostatic secretion obtained by pressure on the prostate may in both cases contain leucocytes. Sometimes we may be able to discover tubercle bacilli in the secretion and all doubts are then dispersed. But the absence of the bacilli in a microscopic specimen does not exclude tuberculosis. We, then, must rely upon rectal palpation. In tuberculosis we generally find the prostate studded with tubercular nodules. Prostatic tuberculosis being very rarely primary, the diagnosis is easily cleared up by the detection of tuberculosis in other organs.

The prognosis of chronic prostatitis in the early

stages is not unfavorable; in the advanced form, especially when the prostate on rectal examination gives the impression of being flabby and distended with secretion, a cure is more or less doubtful. Yet even in these cases we can afford a great deal of relief to our patient. Many a neurasthenic can be cured of his complaints, although a residuum of his prostatic affection remains. Careful and proper treatment can do much, even if it has to overcome many difficulties, and even if it leads to only partial success. But in the latter case also, the general condition of the patient will be materially improved. The treatment of the disease must not only be local but also constitutional. It should never be forgotten that most of our patients are neuropathic individuals, and we must therefore from the beginning endeavor to gain their full confidence. If local treatment relieves them of their principal annoyances we must impress upon them the curability of their disease, with the object to distract their minds from the hypochondriacal thoughts regarding their local affection. This general treatment will be essentially assisted by corroborative measures. For anemic or lymphatic individuals we provide tonics, fresh air, mild exercise. Carefully directed hydropathic treatment will often benefit materially. Our local therapeusis should, first of all, be prophylactic, that means we should do our very best to prevent the setting up of a prostatitis in all cases of gonorrheal urethritis. A careful treatment of the latter will in many cases enable us to avoid prostatic complications. If, however, acute prostatitis sets in, we should try to cure it as quickly and as completely as possible. An early detection of acute prostatitis before the inflammation has involved the whole gland, is the first step to a quick cure. I repeat, therefore, the necessity of examining every case of gonorrhea on this score. As soon as an acute prostatitis is diagnosed, we should put our patient to bed and stop all urethral injections and endo-urethral treatment. I am in the habit of prescribing the following treatment for my patients with acute prostatitis: Twice a day, morning and night, a rectal injection of warm water of at least 35 degrees C., care being taken that the nozzle of the irrigator does not hurt when introduced into the rectum. At least one pint of warm water should be injected and retained as long as possible. Before making injection at night a hip bath should be given, as warm as can comfortably be borne. After the rectal injection has returned, which usually is followed by a mild stool, a suppository of one-third of a grain of iodoform to one grain, is inserted in the rectum. Should pain be severe, and should micturition be frequent and painful, I add half a grain to a grain of codein phosphoricum to the the suppository. Internally I give santal oil in capsules. By this simple treatment I generally succeed in relieving pain almost instantaneously. This is usually followed, in the course of one or two weeks, by a subsidence of acute prostatitis, the prostate generally becoming almost normal to the touch. Of course, abscesses of the prostate, when already formed, have to be opened. It is, however, very rare that suppuration leading to an abscess takes place if my plan of treatment is instituted at an early stage. When, after the acute stage is overcome, chronic enlargement with all symptoms of chronic prostatitis remains, massage of the prostate is recommended.

Cases of an established chronic prostatitis, especially very old cases, are much more difficult to treat. In the great majority gentle massage of the prostate every second or third day will prove the most effective means of procuring, if not a complete cure, at least decided improvement. To hasten the reabsorption of the inflammatory exudations in the prostatic gland, I continue the warm rectal irrigations as prescribed for acute prostatitis, as well as the warm hipbath and the iodoform suppositories. Lately I instituted another course of treatment besides massage of the prostate. An Arzberger rectal apparatus is introduced into the rectum and a stream of hot and cold water is conducted through it alternately. First a hot water stream runs three to five minutes through the double canula of the apparatus, and immediately after it a stream of cold water is passed through it. This is repeated until about 2 liters of each, hot and cold water, have made their circuit through the apparatus. By this alternate application of heat and cold in quick succession a rapid contraction and dilatation of the blood vessels of the prostate is produced, acting upon the gland almost like an electric current, only with less violence.

The first noticeable result of this treatment is that almost from very first application the patient experiences relief from the local pains, which in the course of a few weeks generally disappear entirely. All my patients are very fond of this kind of treatment, and I can strongly recommend it. I repeat that massage of the prostate is regularly done at the same time.

All the suppositories except those of iodoform, prescribed for chronic prostatitis, have yielded so little good in my practice that I have given them up entirely. Of course it is understood, that in treating chronic prostatitis, the patient should be cured of his chronic gonorrheal urethritis at the same time.

A NEW SIMPLEST PROCTOSCOPY.

Presented to the Section of Surgery and Anatomy at the Forty-ninth Annual Meeting of the American Medical Association held at Denver, Colo., June 7-10, 1898.

BY THOS. CHAS. MARTIN, M.D.

LECTURER ON DISEASES OF THE RECTUM IN THE CLEVELAND COLLEGE OF PHYSICIANS AND SURGEONS, CLEVELAND, OHIO.

It has been complained that the best methods proposed for the inspection of the rectum require so expensive an armamentarium and such an infinite degree of painstaking practice on the part of him who would see, that the busy general practician can not hope to invade with his keen glance this darkest continent of special surgery. This is an error. On the contrary, as we shall see, no artificial means whatsoever are required for a complete ocular inspection of the rectum.

The elevation of the hips which sets in operation that principle of physics which governs the methods of Marion Sims' vaginal inspection (1845), Van Buren's rectal inspection (1871), and the method of the senior Allingham (1882), of Walter J. Otis (1887), and of Howard Kelly (1895), which controls my own procto-colonoscopy (1896), and which suggested Trendellenburg's posture, is, also, the chief feature of this the simplest proctoscopy.

The essentials of this method are a patient, an assistant and an operator having at least one finger on each hand. The patient is to be put into the knee-chest posture; the assistant is to put and to hold the patient; and the surgeon's fingers are to be used to open the anus, all in the following manner, to-wit:

1. The patient is to be completely anesthetized as

he lies on his back, and then turned toward the assistant and into Sims' posture.

2. The assistant is to station himself at the patient's knees. In his left hand he is to grasp the patient's feet. He is to lean himself against the patient's knees. He is to pass his right arm under the patient's hips. Now steadying the feet and bearing himself firmly against the patient's knees, with his right arm he is to lift the hips and pull the patient into the knee-chest posture.

Here, securely in the embrace of the assistant, the patient is to be balanced on his perpendicular right thigh. Exactly here, throughout the whole time of the surgeon's manipulations, steadily the patient must be held.

3. The surgeon is to close his hand and to point his index finger as shown in the accompanying illustration. (Plate 1.) So, likewise the other hand. The wrists are to be crossed, the hands placed back against

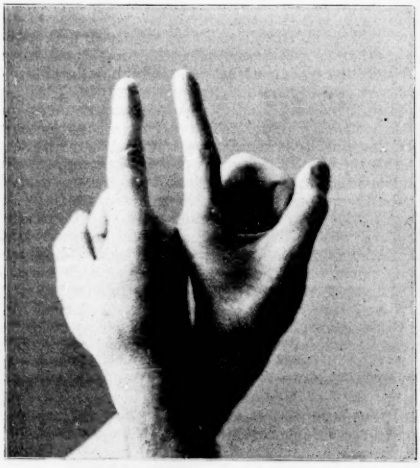

FIGURE 1.

back, and the nails of the index fingers placed one against the other, as shown in the accompanying illustration. (Plate 2.) The surgeon is to lubricate these fingers and gently insinuate them through the anus and place their ends beyond the borders of the levatores ani. This accomplished, the anus is to be divulsed in the direction of the ischial tuberosities, by the surgeon forcibly parting his fingers as is shown in the accompanying illustration. (Plate 1.) Under this manipulation the rectum becomes atmospherically inflated.

Now, provided the surgeon lower his head to the level of his fingers and then rise again, or stoop, or move a little from side to side, he may command under his eye a view of the atmospherically inflated rectum to the depth of six or eight inches (15.24 or 20.32 cm.) and in some instances he may behold even a part of the sigmoid flexure.

It is possible for the operator to manipulate his patient and to finish his inspection within two and a half or three minutes, provided the patient be in a state of complete anesthesia.

If this method be practiced, as I am persuaded it may be with facility by the general practitian, I am convinced that the greater number of rectal diseases may be instantaneously diagnosticated. But I must declare that here, at diagnosis, the achievement of the simplest proctoscopy ends, for the reason that the operator's hands are so full of his patient he can do nothing at all for the disease which he may have discovered.

Under some conditions and amid some circumstances the rectum will not inflate. If there be a close stricture of the rectum, if there be malignant growth or other diseases of the rectum by means of which the gut's coats have become extensively filled and fixed with an organized plastic exudate, if for some reason the intra-abdominal pressure be abnormally increased, as it may be by the voluntary bearing down of the patient, as it may be by enormous intestinal flatus, or by ascites, or if there be an inpinging

FIGURE 2.

uterus, extra-rectal growth or extensive infiltrating disease of the contiguous textures, rectal inflation by this method or by any other which is governed by the same principle is a physical impossibility; but this need not baffle the man bent on seeing by instrumental aids.

Practiced as described, when not embarrassed by the exceptions specified, this method will achieve its purpose and reveal to the surgeon that the transverse diameter of the rectum is variable; while in some places it is not more than an inch (3.54 cm.), in others it is more than four times this diameter.

The rectum may present to the eye of the imaginative observer the appearance of a chain of urinary bladders, communicating one with another by means of irregularly elliptical openings set at varying axes, and bounded by the non-parallel borders of the semilunar valves. In the normal rectum the air pressure smooths the mucous membrane evenly over the entire surface of the gut. The normal mucous membrane of the so-called ampulla appears at first wet and of a

shining bluish gray. As it dries, under the influence of gravitation the blue venous tint fades out of the gray and the wall becomes pink tinged. Presently it assumes the appearance of parchment, and sometimes it appears painted at rare intervals with ramifying little arteries which are crowded and overlapped by the larger companion veins; the latter are less arborescent and more suddenly dive and disappear in the bowel wall. In time, over all there comes a sheen as of collodion varnish and the vascular pictures fade save that one beneath the promonotory of the sacrum. These phenomena appear exactly as described only in the healthy rectum; in the diseased organ the color varies much.

Should the operator deviate from the prescribed directions for the manipulation of his fingers and so twist his hands as to divulse the anus in the antero-posterior direction instead of laterally he invites defeat upon himself; for in the male the fixation of the perineum and the immobility of the coccyx interfere with the requisite dilatation; while in the female, the extreme mobility of the perineum and particularly the backward displaceability of the coccyx will allow such traction to be made upon the levatores ani as to pull their inner borders parallel and almost together, and in consequence the wider the female's anus be opened anterio-posteriorly the closer it shuts laterally to rob us of our view.

1077 Prospect Street.

PRIMARY CARCINOMA OF THE AXILLA.

Presented to the Section on Surgery and Anatomy at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY D. W. GRAHAM, M.D.

CHICAGO, ILL.

Carcinoma of the axilla consecutive to a primary focus of the disease in the mammary gland, or some other organ or structure, is a matter of almost daily occurrence in the experience of the surgeon. But primary carcinoma of the axillary region is rare enough to be worthy of discussion, especially as it raises some important questions in the fields of histologic anatomy and pathology, and of practice. There is no apparent reason why this region might not be the site of the squamous celled, or true skin carcinoma, as frequently as any other in the body. Primary cancer of the axillary skin is, however, exceedingly rare. Of 7297 primary cases of carcinoma analyzed by Williams 571 were of the skin, but of these latter only three were axillary.

There is no doubt but that occasionally a primary carcinoma of the breast will first manifest itself clinically through the infection and enlargement of the axillary lymphatics. The primary nodule, small, slowly-growing and deeply seated, and the conditions present for quick invasion and rapid progress of the lymphatic infection would give a pathologically secondary, but a clinically primary tumor in the axilla. While this is the explanation usually given and generally accepted for most carcinomatous tumors first appearing in this region it is applicable only to a small number of such cases, and should not apply except when the axillary tumor shows an exclusively lymphatic histologic basis.

There are two structures found in the axillary space in which carcinoma is prone to originate, which will account for nearly all cases of true primary carcinoma in this region. One of these is the supernumerary mammary gland tissue more or less perfect or rudimentary, found occasionally, and the other structure constitutes the large convoluted, tubular sweat glands, which are constantly present.

The most complete recent exposition of the subject of supernumerary mammary glands in the human subject is that by W. R. Williams in the *Journal of Anatomy and Physiology*, Vol. xxv, 1891. It is shown that there may be one, two, or three of these above the normal gland on a line diverging outward to the axilla—two on the border of the pectoral muscle, and one in the base of the axilla. The latter is the least frequent. Most frequently these supernumeraries are rudimentary masses lying wholly beneath the skin and neither visible nor palpable, resembling in gross appearance ordinary subcutaneous connective tissue, but microscopically they show some of the normal elements of the gland. These subcutaneous "mammary lumps," as they have been called, may be wholly detached from each other and from the normal mammary gland, or they may be joined to the latter by an isthmus of the same kind of rudimentary tissue. In 132 consecutive cases of carcinoma in the mammary region in females Williams found that 13 of them had their origin in supernumerary structures quite outside the normal glands. None of these, however, were located in the axilla proper.

The sweat glands of the human axilla have been specially described by such anatomists as Sappey, Koelliker and others, but it remained for C. H. Creighton to demonstrate their peculiarities and emphasize their significance from a pathologic standpoint. In the Royal Medico-Chirurgical Society transactions of 1882, Vol. lxv, page 53, he reports three cases of axillary carcinoma in dogs, originating in the large axillary sweat glands. Spencer Wells, in Wood's Monographs, Vol. iii, No. 1, 1889, reports a case of axillary carcinoma with the microscopic findings which seem to demonstrate that it originated in the large, tubular sweat glands in the manner described by Creighton. They are regarded as a kind of rudimentary organ of cutaneous secretion in the human when compared with similar structures in the lower animals, and, as Wells observes, are subject to all the risks of such survivals or rudiments. These glands, while also found in the groin and in the areola of the breast as well, are looked upon as midway in structure, with their large acini and amount of secreting surface, between the ordinary sweat glands and the mammary gland. They have their distinguishing histologic features by which they can be identified with ease. They are situated under the skin and not in the skin like other sweat glands and their ducts open into the hair follicles. They are large enough to be detected as firm, round bodies in the subcutaneous tissues in a dissection. It is quite probable that a more careful study of specimens of primary axillary tumors would show these glandular structures to be the point of departure for the morbid process in the majority of cases, rather than the supposed axillary supernumerary mass of mammary tissue. A study of the clinical histories also of those cases which have been put on record is suggestive in this same direction.

The two following cases have served as a basis for this brief paper on this subject:

Case 1.—Miss DeC., aged 50 years, came into my hospital service in June, 1898. The right axilla was filled with a hard mass which was already causing edema of the arm by pressure.

The history and physical characteristics all pointed to carcinoma. Nothing abnormal could be detected in the breast nor in the tissues intervening between this and the tumor. Removal of the growth required an unusually difficult dissection, a section of the axillary vein being extirpated with the mass. Six months later the patient returned with a nodule not larger than the end of a finger, just beneath the skin, about the middle of the upper hemisphere of the mammary gland. The skin was involved and adherent to the nodule. The breast was amputated by my colleague and a microscopic examination was made by Dr. William E. Schroeder, who had already examined the tumor removed six months before from the axilla. Both specimens were demonstrated to be carcinoma.

Case 2.—Mrs. A. C., 30 years of age; had had acute mastitis with suppuration while nursing a child in 1895. The examination, December, 1897, revealed a hard tumor in the base of the right axilla as large as a hen's egg, and which had been developing for a number of months. There were several small nodules, which had developed later, extending along the border of the pectoral muscle toward the breast. The latter was equally consistent throughout and except that it was firmer and slightly larger than the left breast, it seemed to be perfectly normal. The main tumor was movable, and to all appearances did not involve the overlying integument. The several smaller nodules seemed to be enlarged lymphatic glands.

The operation consisted in removing both the tumor and the breast, together with the isthmus of intervening infected tissue. Dr. L. Hektoen made a careful microscopic examination of the specimens and reported there was no carcinoma of the breast proper, it being, however, in a state of chronic inflammation. The ducts were much enlarged and dilated, filled with semi-solid secretion, cheesy like and surrounded throughout the whole breast and nipple by hyaline connective tissue. The main tumor from the axilla was simple carcinoma with considerable fibrous tissue, and the intervening lymphatics were some of them carcinomatous, and the opinion was expressed that the nodule nearest the mammary gland was an outlying accessory portion of the gland, although before the operation there seemed to be a clear intervening space between them.

It is to be regretted that in neither of these cases did it seem possible to demonstrate by the microscopic examination the exact anatomic structure or characteristics of the tissue in which the carcinoma appeared.

After a thorough search of medical literature I have been unable to find but eighteen reported cases of primary carcinoma of the axilla which can be accepted as such. I have rejected a number of those that have been so reported, because the evidence shows that they were either sarcoma or secondary carcinoma. Even two or three of these eighteen, which follow, might prove to be sarcoma if fuller histories were obtainable or if the specimens had been microscopically examined since the time when there began to be histologic differentiation between sarcoma and carcinoma.

Case 1.—H. Snow, London *Lancet*, March 12, 1898, p. 717. Female, aged 47. Hard mass, filled whole axilla. One and a half years' duration. Skin adherent. Breast healthy, but removed with tumor because the disease seemed to be traveling toward the mammary gland, the normal direction of infection being cut off.

Case 2.—C. E. N. Kelly, London *Lancet*, March 26, 1898, p. 859. Female aged 80. Tumor size of pigeon's egg in middle of axilla at fourth rib. Hard and fixed to the chest wall. Skin ulcerated. No apparent connection with breast. No operation. Its course was watched and it extended gradually along the border of the pectoral muscle to the breast, which became involved. No lymphatic glandular enlargement. The opinion is expressed that the tumor did not originate in an outlying free nodule of mammary gland tissue.

Case 3.—F. P. Paul, Transactions Pathological Society, London, 1895, Vol. xlvi, p. 153. Female aged 29. Tumor appeared in axilla while nursing child, then disappeared, and reappeared when nursing next child and took on all the characteristics of typical scirrhus. Tumor excised. No connection with the mammary gland. Cut section exuded white secretion, like inspissated milk. Thinks it originated in sweat glands, but this opinion is controverted by Williams, who believed it arose from a detached axillary mammary lobule. (*British Medical Journal*, 1894, Vol. ii, p. 1405.)

Case 4.—H. Walton, *Medical Press and Circular*, London, 1895, Vol. ii, p. 45. Primary hard cancer in axilla. Operation. Several recurrences. Subsequent operation. Immunity of the breast from cancer.

Case 5.—Spencer Wells, *Wood's Med. and Sur. Monographs*, 1889, Vol. iii, p. 18. "Cancer and Cancerous Diseases." A case of axillary tumor removed. Female aged 46. Microscopic examination showed origin in the sweat glands. Breast free from disease.

Case 6.—Bailly, *Le Progrès Médicale*, Second Series, 1887, Vol. v, p. 53. Female aged 68. Tumor of right axilla. Three years' duration. No connection with mammary gland. Microscope showed hard carcinoma.

Case 7.—Pied. *Bulletin Société Méd. de la Tours*, 1886, Vol. xxvii, p. 62. Carcinomatous tumor of the axilla. Extirpation.

Case 8.—J. Congoureux, *Gaz. Med. Chi.*, Tolouse, 1881, Vol. xiii, p. 137. Voluminous carcinoma developed spontaneously in the right axilla without morbid change of the breast.

Case 9.—J. Coates, *Glasgow Med. Jour.*, 1879, Vol. xi, p. 322. Melanotic cancer removed from the axilla by MacLeod.

Case 10.—Von Mosetig-Moorhof, *Ber. d. K. K. Kranken*, Wieden, 1898, p. 190.

Case 11.—R. A. Cleemann. Transactions Pathological Society, Philadelphia, 1867, p. 151. Female aged 70. "Lump" in axilla $1\frac{1}{2}$ inches in diameter of four years duration. Excised. A year later another lump appeared between the cicatrix and the breast. Both tumors pronounced epithelioma, the latter described as composed of a half dozen hard, rounded bodies in size from a split pea to a marble, making a single mass. The appearance of the mass and the skin led to the suggestion that the origin was in the appendages of the skin—"the sweat glands."

Case 12.—C. F. Maunder, Transactions Pathological Society, London, 1862, Vol. xii, p. 229. Male aged 30. Open cancerous ulcer involving the axillary artery, not excised. Began as a lump in the axilla one year before, every clinical feature of carcinoma, but not demonstrated microscopically.

Case 13.—R. Alba, *Espana Med.*. Madrid, 1862, Vol. vii, p. 388. Axillary cancer. Extirpation by Prof. Natalis Cano. Reported cured.

Case 14.—S. Benavides, *Chron. Y I Hosp.*, Madrid, 1856, Vol. iv, p. 206. Occult cancer and scirrhous tumor in the right axilla. Extirpation.

Case 15.—H. Ohm, *Deutche Klinek.*, 1854, Vol. vi, p. 288. Female aged 40. Tumor arose from birthmark in axilla which had been accidentally abraided and ulcerated a year previously. Other tumors developed in the axilla which proved to be of the lymphatics. The tumor was removed and it appears that the breast was not affected.

Case 16.—M. Marjolin, *Bulletin de la Société Chirurgie*, Paris, 1862, Vol. iii, p. 410. Female aged 57. Left axilla; small painless tumor several months duration. This was extirpated and consisted of three distinct nodules. The microscopic examination was made by M. Robin. He remarks that the tumors are of a very rare species. His report, together with the clinical evidence and gross appearances given is almost conclusive that the case was one of primary carcinoma of the large sweat glands if interpreted in the light of today.

Case 17.—R. W. Smith, *Dublin Medical Journal*, 1838, Vol. xii, p. 65. Female aged 30. A hard, movable, painless tumor appeared in right axilla. Afterward the axillary vessels and surrounding tissues became involved. One year and some months later a tumor was noticed in the breast. No operation. Autopsy showed carcinoma of the stomach and other viscera. The author reports the case as one of primary carcinoma of the axillary glands.

Case 18.—M. Marrotte, *Jour. de Méd. et Chirurgie*, Vol. iv, p. 107, 1831. Male aged 22. Tumor filled right axilla. Extirpated and examined microscopically. Report says several forms of cancer and cysts full of blackish fluid were found. It is questionable whether this was not a case of sarcoma.

In a given case of carcinoma, originating in and apparently confined to the axilla, established surgical principles imperatively require wide removal of integument, fat and lymphatic tissue from the axilla and of the latter two structures along the border of the pectoral muscles to the breast, whether apparently invaded by the disease or not, and in most cases some of the muscular tissue, as well. But it becomes a very important practical question whether the breast itself should or should not be included in the operation. It would be the safer course to remove the breast in all cases, but some exception can be made to this general rule consistent with good surgery, the question hinge-

ing on the age of the patient, the extent of the disease, and the length of time it has existed.

CONCLUSIONS.

1. Primary carcinoma of the axilla is probably more frequent than the small number of recorded cases would seem to indicate.

2. When present it originates, *a*, in the large tubular convoluted sweat glands peculiar to this region, *b*, in supernumerary mammary gland tissue more or less rudimentary, or *c*, in the true skin; and as to relative frequency in the order named.

3. When the disease appears first in the axilla and later in the mammary gland the most satisfactory and the most logical explanation is that there has been retrograde infection through the lymphatics from the axilla to the breast.

4. When the lymph glands and channels or other tissues between the axillary tumor and the mammary gland are at all infected, or suspected, the gland should be removed along with the tumor and the intervening infected tissues.

5. In any case in which the breast is not removed it should be carefully examined at short intervals for the first manifestations of disease.

DISCUSSION.

Dr. CHARLES A. POWERS of Denver—The practical importance of this subject can not be overestimated, and it shows that in addition to the removal of the primary neoplasms of the breast, those of the axilla should be subjected to the same management. The rule is absolutely established that no part of the mammary gland is to be allowed to remain without a most thorough and careful examination. It is well known by all surgeons and is becoming more and more appreciated by physicians and the laity. Our success lies in early recognition and extirpation. During the past year I have removed from the anterior axilla a nodule the size of a hen's egg. Clinically, differential diagnosis could not be made between a benign and a malignant growth, and the pathologist who examined this specimen called it a supernumerary mammary gland, which was the seat of the fibro-adenoma, although it might just as well have been malignant.

Dr. OCHSNER of Chicago—At the inner limits of the axilla, and the lower edge of the pectoralis major muscle, there is a point at which I have seen three carcinomatous growths, and in each one the nodule was first movable underneath the skin, consequently it could not have originated from the sweat glands in the skin, nor from anything except glandular tissue. The only glandular tissue there would be a portion of the mammary gland, and cancer in this region can originate precisely as could epitheliomatous growths elsewhere. In this particular location, if the points in its development are observed, it is perfectly plain that the cancer must come from a supernumerary mammary gland. I have frequently found extensions of the mammary gland a considerable distance from the gland proper, and I cannot see why there should not be extension in the axillary direction as well as in any other. Under these circumstances, the carcinoma would originate precisely the same as from any other lobule, only the lobule is slightly displaced.

Dr. A. D. BEVAN of Chicago—There are two possibilities that must be borne in mind, one of which is the occurrence of a small primary focus of carcinoma, which is overshadowed by the secondary growth. It may be that the primary growth is a very small nodule in the mammary gland, while the secondary mass may be in the axilla. In one of Dr. Hirschfelder's cases, there were extensive deposits of carcinomatous tissue in the prostate without any primary lesion. I recently had a case in which I amputated the entire outer end of the scapula and clavicle for supposed sarcoma, but postmortem examination showed it to be a case of carcimona. In these cases we must imagine one of two possibilities; first, that there was a small primary focus overshadowed by the secondary mass, or second, the encapsulation of a piece of epiblastic tissue which has developed into carcinoma.

Dr. J. B. MURPHY of Chicago, Ill.—In the cases observed by the author, I would like to ask if the tumor was situated deep primarily or superficial primarily, that is to say, was the skin movable over it in the early stages? Dr. Ochsner laid great stress on this point. We all know that we can find carcinomatous growths in the sweat glands which may or may not have originated in the mammary glands, and every surgeon has noticed that suppurative foci may be found in connection with the skin. Upon opening these tumors they will be found to contain a caseous material, and are largely made up of invaginated portions of the epiblast. These cysts are very common and frequently do not appear to be attached to the skin.

Dr. WILLIAM L. RODMAN of Louisville—I would like to report a case similar to Dr. Graham's, which occurred in a male about 60 years of age, living in Jeffersonville, Ky., who was by occupation a ship carpenter. The case was unquestionably one of scirrhous carcinoma of the axilla, which was removed, and as it was the first of the kind I had ever seen I followed it up until death. This case bears out the remarks of several of the speakers, and I am sure you will occasionally find primary carcinoma in the axilla, although most of these cases are doubtless sarcoma. Dr. Bevan makes a good point when he states that a very small lump in the breast may be overlooked and the growth in the axilla considered as primary when it is really secondary. All of us have seen cases of this kind, and I have had my attention drawn to it by patients. As to the treatment of these cases, I can add nothing to what has been said by the essayist, but would like to insist even more strongly on one point, and that is the danger of infection of the lesser pectoral, which should be removed. It seems to me that it is even more necessary in these cases to remove the glands than it would be the primary growth in the breast itself.

Dr. GRAHAM, in closing—Referring to the microscopic findings in Dr. Powers' case, it is stated that many cases of fibro-adenoma, so-called, originate in these sweat glands, as well as in the axilla and the mammary gland, and it is probable that most fibro adenoma originate in these glands. Dr. Bevan's statement is exactly opposite to what I claim, and there is no reason to my mind why a focus in the prostate should not be secondary as well as primary. It is true we may have a primary focus in the axilla. I believe you will admit that we do have tissue in the axilla capable of giving rise to primary carcinoma, and one of my cases proves this. With regard to Dr. Murphy's questions, the integument in the second case I reported was movable over the tumor, while in the other case the mass was very large, and the skin was tense. It must be remembered that these sweat glands are under the skin and not in it. No doubt we can have a supernumerary mammary nodule in the male as well as in the female.

POST-OPERATIVE INSANITY.

Presented to the Section on Surgery and Anatomy at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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For want of a better term I have adopted this one to indicate certain mental aberrations following operations. That very slight operations are not infrequently followed by severe attacks of insanity is beyond a question; at the same time the most severe operations on those who are insane are frequently followed by the return of their normal mental faculties.

Why this unfortunate complication should follow certain operations in both male and female is a question which up to the present time has not been fully settled from a pathologic standpoint. Statistics on this important subject are severely wanting, and it is believed on the part of the writer, that notwithstanding a few cases of post-operative insanity have been reported from time to time in the journals, a great many more have not been reported, possibly for the want of knowledge as to their cause, or maybe a hesitancy on the part of the operator to announce to the world that he has operated a certain case which has been followed by some form of insanity. The fact that we do have these cases occurring and that their causes are illy understood is certainly a sufficient excuse for having selected this subject, the study of which we hope will throw more light upon this important clinical question.

Among the few cases which have been recorded, the following is the synopsis of a case operated by Dr. Sprague, published in the American Medico-Surgical Bulletin of May 2, 1896, in which he reports having operated a very nervous and hysterical case, which in childhood had been a subject of chorea. At the time of the operation the patient had reached the age of twenty-four, and had given birth to two children, having sustained a laceration of the cervix and perineum at the time of the first birth, but outside of this misfortune her health was practically normal. Without going into the details of the case, she was operated eight months after the second birth. On the eleventh day after the operation she was taken with mania, her temperature at that time being 101 and continued to rise until it reached 106, when she died. The writer states that during her entire illness she partook of a large amount of nourishment consisting of milk and eggs; that her urine was examined with negative results; that the patient never had a chill or chilly sensation, and that the only pus found was one drop about a very superficial suture; that she never had the appearance of a patient suffering from sepsis, the lips and skin being normal in color almost up to the time of of her death. In closing his article he stated "now, was this a case of acute mania and meningitis due to her sensitive and nervous condition, or should we throw out entirely the nervous condition as a cause of her trouble and ascribe it to the results of sepsis? If the latter, was there sufficient pus to produce such violent results?"

In considering the main features of this case it is difficult to understand why this particular patient should have had an acute attack of mania with so small a quantity of pus, when other cases with large quantities of pus and often suffering from septicemia, do recover without any mental aberration.

In referring to the records of the Protestant Hospital I find that my colleague, Dr. J. F. Baldwin, operated a patient Sept. 19, 1895, removing a hematoma of the right broad ligament in a lady, age 28, with good habits, normal urine, bowels regular, appetite good. On the third day after the operation her temperature rose to 103; on the fourth day it dropped to 99¾, at which time she became delirious, but happily responded to the use of bromids and finally recovered from the operation Oct. 9, 1895. The doctor informs me that he has had several cases of post-operative insanity but fortunately none of them had resulted fatally, and that in no case was he able to determine any particular cause for the mental aberration.

Through the courtesy of Dr. J. Collins Warren and Dr. G. W. Nicherson, the author was very kindly furnished with a report of the following case of "delirium nervosum." A German woman about 65 years of age, was operated Sept. 23, 1895, by Drs. Warren, Nickerson and Stone for cancer of the sigmoid flexure, producing intestinal obstruction. The operation consisted in making an artificial anus. The hospital reports show that on recovering from the anesthesia she seemed dull and drowsy, which was followed by restlessness and delirium continuing two days after the operation, when she became noisy, talking continually, but sleeping on an average of about eight hours a day. She partook plentifully of nourishment. Four days after the operation her mental condition changed from that of excitement to that of muttering delirium. The sutures were removed on the fifth day but the delirium continued. On the sixth day after the operation she became very nervous and had hallucinations which consisted in seeing and hearing parties around her. On the thirty-second day she refused nourishment, on the thirty-ninth day she became hysterical and for a time was restless and sleepless. On the forty-fifth day she assumed a melancholy mood, subsequently she became violent, but at other times almost rational.

These extremes of mental aberration continued with little or no rise of temperature until she died, April 1, 1896, 190 days after the operation. This case is interesting from its prolongation and the variety of hallucinations manifested. When we realize the large number of cases that die from cancer without any hallucinations or mental aberration of any kind and on the other hand the large number of patients who suffer from fecal fistulas or an artificial anus, who likewise are free from any form of insanity, the question naturally arises, why should this particular case develop such marked conditions and what are the peculiarities that give rise to them?

The writer has had occasion to meet with several of these seemingly pathologic freaks, among which he might mention the following: Mrs. S. M. C., age 56, white, two children, the youngest about twenty-six years of age, was an unusually strong healthy woman, and with the exception of a laceration of the cervix and perineum was in normal health. Her family history was good, but owing to the long continued laceration of the perineum she became afflicted with prolapsis of the uterus. She was admitted to the Protestant Hospital of Columbus, Ohio, June 24, 1895, and operated June 26, 1895, the operation consisting in freshening the edges of the uterus and suturing them in place and the usual operation for lacerated perineum. The patient made an eventful recovery and was about ready to return home when she was seized with a violent attack of mania, which became so severe as to necessitate her removal to the Columbus State Hospital for the Insane. Her mental condition was so bad when taken there that Dr. Richardson, the superintendent, despaired of her recovery, and for weeks looked upon her case as an exceedingly grave one, although there was no physical evidence associated with the operation that would indicate any cause for her mental aberration. In the course of about three months she began to improve, and one day it dawned upon her that she had been insane, and she fully appreciated her surroundings, and remembered distinctly the hallucinations which had afflicted her during the three months previous, which consisted in imagining she was incarcerated in some jail in which she daily expected to be massacred. Notwithstanding all the delusions, she has fully recovered, and today is in the enjoyment of her normal health and attending to her household duties. As there was no pus infection in this case and no family history leading to insanity, it still remains a conundrum in my mind as to why such a severe attack of mania should have occurred after so trivial an operation, which was devoid of any complications.

I recall another case which was operated at the Protestant Hospital, May 21, 1895, in which I removed the uterus and ovaries. The patient made an uneventful recovery, but after returning home became melancholy, and for a time it seemed that it would be necessary to remove her to the insane-asylum, as her melancholy changed to mania of a vicious charac-

ter. The latter only lasted a few days, and in the course of a few weeks, I am reliably informed, her mental condition became normal, and at the present time she is in the enjoyment of good health. In studying the history of this case I find that fifteen years prior to her operation she had a very severe attack of uterine hemorrhage which was suddenly checked and was followed by an acute attack of insanity, making it necessary for her to be taken to the insane-asylum for treatment, where she remained some nine weeks, when she was dismissed in a convalescent condition. During all this time she had suppression of the menses; three weeks after her return home the menstrual period was regularly established and her normal health returned, and no symptoms of mental derangement manifested themselves until after the operation above referred to.

I will now report a case which is the reverse of those I have just mentioned. Mrs. N., aged 37, of German descent, was admitted to the Protestant Hospital, Nov. 15, 1896, suffering from dementia of twelve years standing, dating from the birth of her last child. At this time she sustained a laceration of the cervix, followed with fibroid degeneration of the uterus. During a part of this time she was cared for in the Columbus Hospital for the Insane, and in 1892 had convulsions in connection with her dementia. Three years prior to the operation, she received a fracture of the arm and immediately became a raving maniac. Her case being a chronic one, Dr. Richardson, the superintendent, advised operative interference, and on Nov. 18, 1896, I operated, removing both ovaries and the uterus. The latter I found very much degenerated, while the tubes were atrophied and the ovaries had undergone cystic degeneration. For a week the patient improved rapidly, her mental condition becoming very much better, the urine being passed through its normal channel, but at the expiration of this time a seepage of urine was discovered in the vagina, which aroused my suspicions lest I had by some mistake injured the ureter. By more careful examination I found that by catheterizing the right ureter the urine obtained was normal, but in catheterizing the left ureter through the fistulous opening, the urine was loaded not only with pus but with albumin, leading me to the conclusion that there was degeneration of the left kidney and ureter. Consequently on Dec. 13, 1896, I made a nephrectomy of the left kidney, which I found enlarged and located abnormally high. In order that no mistake might be made, assisted by my colleague, Dr. Means, I passed the urethral catheter through the fistulous opening into the ureter and allowed it to remain there until I made an exploratory incision into the abdominal cavity, which developed the existence of a diseased left kidney, which was then removed by the lumbar operation, and was found to contain numerous cysts, many of which contained pus. My patient made a rapid and uninterrupted recovery from this second major operation, and for a time the urine passed through its normal channel, but to my chagrin and surprise some three or four days after the operation I found the urine again seeping through the vagina, and on further examination discovered a calculus, which had evidently formed in the right ureter, producing necrosis and suppuration, and was finally broken up and removed through the vagina, thus leaving a fistulous opening. Excepting this my patient still continued to recover, but I found that the continued irritation of the urine worried her, causing a return of the mental aberration.

I again called counsel, consisting of Drs. Baldwin, Means and Dunham, and it was decided that an effort would be made to implant the remaining ureter into the bladder. The patient was prepared accordingly, and assisted by Drs. Means and Baldwin, another abdominal section was made which not only developed the fact that the right kidney was abnormally small and located unusually high, and that the ureter was very large, with a fistulous opening at its lower end communicating with the vagina, but instead of the ureter passing over the psoas muscle and iliac artery immediately underneath the peritoneum, it passed under them, thus making operative interference doubly difficult. Notwithstanding this the ureter was dissected out, when I found that it lacked an inch and a half of being long enough to be inserted in the fundus of the bladder. I then proceeded to dissect the bladder loose from its moorings, but after having done that, the ureter was still too short, and I next proceeded to dissect the kidney loose and bring it down until I was enabled to implant it into the fundus of the bladder, after which the kidney was anchored, the bladder sutured as firmly as possible to the abdominal parietes, the toilet carefully looked after to avoid sepsis, and the patient returned to her room to await results.

Strange to say, notwithstanding that the patient was a debilitated, insane woman, she made a rapid recovery both physically and mentally, but in spite of all our care there was some leakage of the urine both through the abdominal and vaginal wound, which in the course of a few weeks ceased, and I am pleased to state that the patient is now reported doing her own housework, her mental condition normal and her physical condition very much improved.

Owing to the fact that the cases thus far referred to were all females, it might be misleading in the study of this very important and mysterious subject. In order that your minds may be disabused in this respect, I beg leave to briefly report one or two cases which occurred in the male.

J. D. S., age 35, referred to me by Dr. Hyde of Nelsonville, Ohio, suffering from a stellate fracture of the patella, in which the latter had been broken into five fragments. An operation was made at the Protestant Hospital in which the fragments were sutured together with heavy silk-worm gut and the knee joint thoroughly cleansed of blood-clots and fragments of bone. The patient made an uninterrupted recovery until the ninth day, when he was suddenly taken with an acute attack of mania, jumped out of bed and started through the ward, and it was only through the combined efforts of the nurses that they were enabled to get him into bed. From that time on he was deranged and it was only by putting on special apparatus that we were enabled to keep him in bed. At the time of his attack of insanity the wound looked perfectly healthy, but immediately following that it became inflamed and swollen; the exercise in walking through the ward and the efforts in getting him back into bed had evidently torn some of the fragments of the patella apart, which was followed by acute suppurative synovitis, septic infection, and in spite of free drainage and antiseptic treatment, resulted in death.

This case was one of a strong, healthy man whose family history was good, and up to the ninth day

after the operation no evidence whatever of mental aberration was observed, neither was there any physical condition indicating septic infection; hence the sudden attack of insanity which continued for several weeks before final dissolution closed the scene, is unaccounted for.

Mr. L., age about 50, referred to me by Dr. Kelly of Galion, Ohio, was suffering from tubercular osteomyelitis, necessitating an operation and the removal of a sequestra which extended nearly two-thirds of the length of the tibia. The ordinary operation was performed, the wound cleansed with bichlorid solution and packed with iodoform gauze. The patient did well for four weeks when he suffered from a sudden attack of insanity, which at first was of an intermitting character, but gradually became worse until he became a raving maniac, necessitating an apparatus to keep him in bed. During all this time, which covered a period of some two months, his wound continued to repair by granulation until complete recovery ensued so far as the operation was concerned, but his mental condition, although not so bad when he left the hospital, continued deranged and remained so after his removal home, and up to the last account the writer obtained regarding his condition.

It is needless to say that I was more or less chagrined when I was brought face to face from time to time with these cases of so-called "delirium nervosum," lest it were some fault of mine in operating or dressing the case, or some neglect on the part of those who cared for it in the hospital, but my mind was greatly relieved when I found that such a distinguished surgeon as Dr. John B. Hamilton, editor of the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, was meeting with similar conditions, in which he informed me he had called in the best experts on mental and nervous diseases in the city of Chicago, who up to that time had failed to discover any particular cause for these mental disturbances. In order that I might have further information in regard to this very serious complication, I took the liberty of writing to several distinguished surgeons throughout the United States, making inquiry as to their experience in cases of this class. Among numerous answers which I received was one from Dr. John B. Deaver, of Philadelphia, in which he says, under date of March 28, 1896:

"The cases of post-operative insanity which have occurred in my practice have all presented a clear history, *i. e.*, perfectly sane all their lives up to time of operation. The patients who have been so affected have not had any febrile disturbance and the cause could not have been attributed to drugs. I have not had any deaths occur, yet I know that this sometimes happens."

On the other hand, Dr. Howard A. Kelly of Baltimore, in a letter received under date of March 17, 1996, said: "I will very gladly look up the matter and write you in a day or so," but up to date he has failed to report the results of his investigation, leaving us to speculate as to whether he ever had a case of this kind, or if he had, as to whether he was willing to report it.

Dr. John A. Wyeth of New York wrote me under date of March 15, 1896, in which he said: "In regard to your subject of post-operative insanity, I do not think I could contribute anything of interest. I do not now recall a single case of well-marked insanity resulting after an operation."

Dr. R. Stansbury Sutton of Alleghany, Pa., writes me under date of March 15, 1896, in which he says: "I have never seen a woman who was sane when operated, become insane afterwards. I have frequently operated insane women. Some of these have been cured by the operation and three have not been cured. I suspect that in some instances the excessive use of iodoform, at and after the operation, is conducive to, or rather productive of, insanity."

Under date of March 13, 1896, Dr. Rufus B. Hall of Cincinnati wrote me: "I have had five patients develop acute mania after sections and one after vaginal hysterectomy, the mania lasting from twelve to thirty days in four cases and three or four days in one case. The patients all recovered and are now well. Two of these patients had been insane before operation. One suffered several months but had been well a couple of years; the other had been in the asylum for a year at one time and two and a half years at another time. She was out of the asylum a year or more when she developed an ovarian tumor, for which the operation was made. The three others never had any mental trouble preceding the operation."

I will not take time to quote further from correspondence, which seems to be as varied as the cases that have fallen under my own observation. Certainly the cause ascribed by Dr. Sutton can not be attributed to any of the cases I have reported, except the one with the osteo-myelitis, for that was the only one in which I used iodoform, and yet I had a series of cases ranging over a period of years, no two of which were alike, and on the other hand, as has been stated by Dr. Sutton, I operated a case of chronic insanity which was submitted to several capital operations, which not only recovered from the operation but from the insanity.

My paper is already too long to enter into a discussion of the pathology of these anomalies, and if it were not, the clinical evidence obtained up to the present is so confusing that I doubt whether we could arrive at a satisfactory conclusion. I am aware that septicemia may produce a species of ptomains followed by mental aberration, but the preponderance of evidence of the clinical cases which I have reported does not show the presence of septicemia, and hence I am compelled to eliminate this as the predominating cause, for in many cases the mental disturbance did not begin until after the patient had recovered, or only lasted a short time in cases where there was no evidence whatever of the existence of septicemia or pyemia.

Whether climatic influence has anything to do with it or not I am unable to say, but one thing I do know, that since I have been connected with the Wyoming General Hospital, which is located nearly a mile and a half above sea-level, in the heart of the Rocky Mountains, I have not seen a single case of post-operative insanity, notwithstanding we have had many severe accidents, saying nothing of the operations for lacerated cervix and other gynecological operations, while in Ohio a number of similar operations were followed by post-operative insanity, with and without the existence of pus.

I hope that my contemporaries will be free to report these very interesting and troublesome cases and that from these reports we may, in the near future, be able to determine their pathology and, if possible, avoid their occurrence.

QUESTIONS IN THE TREATMENT OF CONGENITAL DISLOCATIONS OF THE HIP.

Presented to the Section on Surgery and Anatomy, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY HARRY M. SHERMAN, A.M., M.D.

SAN FRANCISCO, CAL.

In the treatment of congenital dislocation of the hip by modern methods, reduction of the dislocation by manipulative or operative means, we must wait long for a success to become an assured one; we may not have to wait long for failure. Therefore any one reporting success can do so, at the present time, only with the qualification that the case is "successful up to date." Tomorrow, or the day after, may witness a reluxation, and the work will have to be finally counted a failure or will have to be done over.

I have practiced the operative and manipulative reduction only during the past two years, and my experience will let me speak of but the beginning of my cases which I would count successes; of my failures I can speak with more definiteness. I do not intend to detail methods or case histories *in extenso*. The literature of the operation is becoming very voluminous, and the main facts have been many times repeated. I shall suggest only a few points which specially interest me by reason of their difficulty, or because I do not fully understand them.

OPERATIVE REPOSITION.

I have done the reposition by operation nine times, and the first time I could not definitely locate the acetabulum, and in my endeavors there was considerable injury done to muscles and other tissues. The matter is, after all, simple enough if one bears in mind the point which has, I think, been properly made; that the femoral head is always within the capsule, and that the latter always has its original attachments to pelvis and femur. Therefore, if the femoral head be found (and this is an easy matter) and the capsule covering it be incised, the finger, slipped into this incision, will pass at once along the elongated capsule to the acetabulum. There is more importance in this early finding of the acetabulum than at first sight appears. The incision through the skin and fascia has done no injury to a part having an active function; the muscular covering of the head can be traversed by simply separating the fibers with a blunt instrument; the only other tissues that need cutting are the capsule and the floor of the acetabulum, the former to permit access to the latter and the latter for the hollowing out of a proper socket. Knowledge of this simple and obvious path to the joint may save a tedious time of search and much mutilation of muscles, and the preservation of the function of the latter is of definite practical importance. In addition to this, the shortening of the time of the operation directly lessens the danger of sepsis; and suppuration in one of these cases is, I chance to know, a very tiresome thing.

In one of my earlier cases I noted that when the plaster of Paris splint was first removed the joint was apparently freely movable, but in a limited range; later there was a rigid limitation of motion, the limb being held flexed and adducted; and still later, though there was no massage nor passive movements practiced, the rigid flexion and adduction ceased, and full extension and ample abduction became possible. I had compared the *mechanical* conditions in these reduced congenital luxations to the conditions that pertain in an ordinary healed hip joint tuberculosis; in each there was some alteration in the shape of acetabulum which made it a less suitable socket for the femoral head; in each there was some irregularity of the femoral head which made it a less perfectly adapted mechanical part; and in each there was some shortening and distortion of the femoral neck which made it a shorter and less efficient lever for the action of the thigh abductors. Therefore it seemed quite natural that, in my little case, the limb should take the position of the third stage of hip joint tuberculosis; and later, it seemed plausible to argue that the increased range of motion was due to late absorption of the plastic effusions which had occurred immediately after the operation, just as we see a practically stiff tuberculous joint regain the great part of its function with the subsidence of the tuberculous process. Other cases have not followed the course of this one, and three hips, in two children, have gone on to practical anchylosis, the amount of motion permitted being too little to be of any use; and in each instance the stiffening has come on gradually, and while the child was using the limb with apparent perfect comfort. This is difficult for me to understand, unless it is due to cicatricial contraction. When the splint is first removed the cicatricial tissues in the joint are young, and there is then free motion through limited arcs; this motion is enough to be quite easily measured by the goniometer. Later, there has been gradual lessening of motion to practical joint rigidity; and this has come on during the period when the cicatricial tissues have been aging and contracting. Furthermore, the location of this cicatricial tissue must be inside the articulation, not in the tissues of the capsule nor in the muscles around the joint. I believe that for this reason: I operated early this year, for the reduction of an old irreducible traumatic dislocation of the hip in a child 4 years old. The operation was on the lines of a Lorenz operation for a congenital dislocation. I found that, at the time of this dislocation, the capsule had been torn entirely from the femoral neck, and I discovered it lying collapsed in the acetabulum, and quite firmly adherent there. To effect the reduction of the head it was necessary to cut all of the internal rotator group of muscles. Now, it was not practical to suture the capsule to the femur, so it was pulled into its place, as nearly as possible, and left; nor could all of the cut muscle be sutured, but only a part of it. Therefore, in this case, I had made more extensive sections of tissues than I have found necessary in congenital cases, and there was a very questionable arrangemennt of the capsule; and yet, after an uneventful healing, I had a joint with a very satisfactory range of motion in a useful arc, and a most gratifying functional result. But in this case the articular cartilage on the femoral head and in the acetabulum was quite normal, while in the congenital cases, the femoral head is put into a cavity hollowed out in the bone of the pelvis. It is true that this cavity has a floor that is made in part of cartilage, for in all these cases ossification is incomplete and the unossified triangular piece of cartilage between the three segments of the os innominatum is in the center of the floor; but this is not articular cartilage, rather cartilage that must eventually become bone, and all around it the cancellous tissue of the bone is exposed, and from this granulation tissue may grow, may become adherent to the femoral head

and neck and bind it closely, and more closely, in one position.

I have been obliged to come to this theoretic conclusion because I have been unable to find the records of a postmortem on one of these cases, made late enough after the operation to display exactly the final anatomic result in detail. Now, if this is so, the question of securing a freely movable joint, even in a limited range, is a most difficult one; for any forcible motion will only be a fresh trauma which will require more cicatricial tissue for its repair, and anything short of a motion that will make the head move freely within its socket, will be only the stretching of tissue today, which will contract tomorrow, to be stretched again the day after. This last is the method of Lorenz, and it is tedious, painful and it is reported to get but partially satisfactory results. I have not practiced it myself for the reason I have already given, that I thought the late absorption of plastic effusions, under the stimulus of the active motions of the child, would slowly free the joint; but the three stiff joints that I have, out of my little series, have shown me that this tiresome after-treatment of the operative cases may be necessary.

In my last case, a girl of 11 years, in whom the operation is not two and one-half months old, and whose hip was becoming progressively stiffer, I have, under an anesthetic, broken up adhesions and made sure of free motion. During this manipulation there was no tendency to reluxation and the head moved freely in the socket, with but a little crepitation at one place. From this operation I feel quite sure that it was the fastening of the head to the acetabular floor that limited motion, and that my task is to establish here a nearthrosis by the persistence of sufficient motion to prevent reattachment; to favor the development of a bursal sac and a pseudo-cartilaginous lining of the acetabulum similar to that in a true pseudo-arthrosis sequent to a fracture of a long bone. A second manipulation, under anesthesia, a week after the first, found the joint, which had been treated by passive motion and massage in the interval, free to move from full extension through 90 degrees of flexion, and through 20 to 25 degrees of abduction from the usual position, and this with less joint crepitation than formerly. If this can be maintained a most satisfactory result will have been achieved. In all of the manipulation of this joint with its restricted motion, it is interesting to note that it never once has resembled the restricted motion of hip-joint tuberculosis. The two conditions, similar in the point of limitation of motion, have been otherwise markedly contra-distinguished.

In another case there has been reluxation of both hips. Just when this occurred I can not say. The child left the hospital in apparently good and satisfactory condition, and when I next saw her, a year later, the dislocation had recurred. I suppose that, in this case, I had neglected the advice Lorenz gave me, to make big acetabula; but as I am to be permitted to repeat the operation this coming fall I will not theorize, but will wait to find out the cause at that time.

In the last case of this series to be mentioned, but one of my comparatively early cases, I was quite unable to bring the femoral head down to the level of the acetabulum, and so I made an entirely new socket, the lower portion of which overlapped the upper portion of the real socket. This was done in a relatively thin part of the bone and opened through the ilium into the pelvis, and into this hole the head was thrust. This case suppurated and was tedious. Under the patient and painstaking dressings and redressings of my associate in the case, Dr. C. M. Armistead, the child finally recovered, but with an anchylosis. The limb, however, is in a good position and is a thoroughly satisfactory means of support and progression.

MANIPULATIVE REPOSITION.

In this procedure the chief obstacle is in the disposition of the capsule at the acetabulum; for extending upward from the acetabular rim to the head in its luxated position, it lies directly over the hollow of the acetabulum and closes it except for a small and narrow slit at the upper part—a slit that is often so narrow that it will not, until it has been enlarged, permit the passage of the head. The manipulation endeavors to tear this slit larger, but this definite object can not always be definitely accomplished, and the head may be placed in the acetabulum, but with a double layer of the voluminous capsule interposed, the head having failed to pass through the slit and having pushed the folded capsule before it. If this occurs the disaster of reluxation is inevitable.

There were ten hips in eight children on which manipulative reposition was attempted, the first having been done about nine months ago, and in nine hips the fact of reposition was apparently accomplished. In one child, a girl 7 years old, who had bilateral dislocation, one hip was irreducible, the other was reducible, but its location in the acetabulum was so very insecure, probably because of the folded interposed capsule, that the idea of keeping it there was abandoned and the child reserved for operative reposition. This has not yet been done. In another case, a boy of 6 years, the reposition seemed to be accomplished, but the evidence was not satisfactory, and so an incision was made, the finger carried down to the capsule and the parts explored by direct palpation. Quite a large hematoma was found just outside the capsule, and it was demonstrated that the femoral head was really in the acetabulum. This was a simple incision with a finger thrust in it, but it suppurated, bacterioscopic examination showed the streptococcus and the child is yet under treatment. The reposition has, however, been maintained and there is a little "shake motion" in the joint, but anchylosis must be the inevitable result. Another case, comparatively easily replaced, became reluxated within six weeks, again probably because of interposed capsule, and in spite of being continually in apparatus—a plaster-of-Paris spica—and in bed. A second reposition seems, up to date, more successful, and the child has now begun to walk in her spica. Another went her whole six months of splint restraint and a month of freedom from splints, and then reluxation occurred. After a little interval of rest the reposition was repeated and splint restraint begun afresh. The final result is now many months off. In a small boy the reposition was accomplished and maintained for six months before the splint was entirely left off. When the splint was definitely removed the whole limb became swollen and congested and flexed at the hip and knee. The child was merely kept in bed and the condition gradually abated, but a certain amount of rigid flexion at the hip persisted, and motion was very much limited. Under anesthesia the joint was shown to be free of anchylosis and reposition was maintained, but the

long head of the rectus femoris and the neighboring fascia lata was very tense when joint extension was made. A subcutaneous section of these was done and a plaster-of-Paris spica put on, and this is still in place. In another little boy the present conditions seem to promise complete success and I have been much tempted to take off my splint—a little spica which does not reach below the knee—before my appointed time. In this little splint the child runs and jumps and climbs, with a hardly appreciable catch in his step, and with perfect freedom and comfort. He must, however, live out his predetermined time of splint restraint, and that will last another month. At the time of changing the splints the facts of maintenance of reposition and freedom of joint motion have been established.

I did not expect that the difficulty I had experienced in the operative cases with stiff joints, was to follow one in the manipulative reductions; but one joint, reduction having been done six months ago, comes out of splint treatment with the reduction stable, but the joint quite rigid in a position of slight flexion, slight abduction, and slight out rotation, and his gait is consequently very awkward. This is the only one that has, at any time, presented such very definite rigidity after manipulative reduction, and the causation is a little obscure. It is not unknown that exudations of lymph may take place in sprained joints, undergo organization and cripple joint motion. (Moullin on Sprains, 42. et seq., Klemm, *St. Peter. Med. Woch.* 1897, No. 28, quoted by A. J. M. S. p. 224, 1898.) I found quite a hematoma just outside of one joint which I had replaced by manipulation, and then cut down on to verify my result. It may be that the stiffness of this particular joint is due to some such cause, and it is being properly massed and subjected to passive movements with the result that it is gradually becoming more movable. It is to be noted, however, that the shallow acetabulum throws the femoral head somewhat forward; and the outward rotators of the hip are adapted to the luxated position, and the reposition puts them on the stretch; and both of these conditions—in this case, at any rate—tend to cause an outward rotation of the limb.

Finally, one little girl with a bilateral dislocation was subjected to manipulative reposition with apparent success, but this proved to be of but temporary duration. A second attempt to reduce proved a failure on one side, and, while the head could be put into the socket on the other side, it could not be made to stay there. I decided to repeat the operation I had done for the traumatic dislocation; and so I cut down on the left hip and found that in the original manipulative reposition the head had been put into the acetabulum but the double layer of capsule had intervened. Section of this flap with a tenotome disclosed a very poor acetabulum, but one that could be used, and so the head was thrust in it, and the capsule overlapped at the point of section and the pelvic portion stitched to the femoral neck. On the other side the incision of the capsule gave vent to 6-8 c.c. of dark synovia, as if a synovitis had been set up by the previous manipulations. The acetabular pocket was more open but the slit needed to be enlarged for satisfactory reposition. In this instance the slit cut in the capsule was sutured, the stitches being inserted some way back from the margin, so as to draw considerable of the capsule into a thick fold, and so strengthen it and lessen its extent. In both cases gauze drains were used and superficial sutures of silkworm gut. By this means I know I have the femoral head properly in the acetabulum; I know there has been no injury to the acetabular articular cartilage, and no special invitation for granulation tissue to develop, and to cause anchylosis; and I know that the disposition of the capsule is such that the upward thrust of the femur in supporting the body, must drive the femoral head deeper into, rather than out of the acetabulum. These points are gained by neither the operative nor the manipulative reductions of Lorenz and Hoffa. What may be the final result I can not say, but it ought to be a good one, and to favor that, and lessen all unnecessary adhesions and stiffness, early manipulations and passive movements are to be begun; as soon as the superficial wounds are healed I shall turn the child over to a masseuse.

This recital of difficulties must not be taken as counting against the operation. The reports, as they have come to us from Europe, have recited brilliant successes, and I have related my incomplete cases and my failures to indicate the difficulties that must be overcome, and the disappointments that may meet us. Still, with the exception of one case where there is practical anchylosis of both hips, and the cases where reluxation occurred, each case treated has been markedly benefited, even though an ideal result has not been reached. As these children grow the new articulation should become firmer, and the limb more useful for support and progression, and this is in direct contrast to the unreduced cases, in which increasing body weight causes stretching of ligaments and muscles and lessens, progressively, joint stability. I have lately examined three women with unreduced dislocations, and their lives are being distinctly narrowed by the increasing difficulties in getting about. It is right that we should try to save the children of today from being overtaken by that fate.

DISCUSSION.

Dr. JAMES E. MOORE of Minneapolis—Although this is a deformity that we are not likely to meet with every day, it is present all over, and I personally know of at least twenty-five cases. Experience has taught us that mechanical treatment is unsatisfactory, and very few cases have been reported where mechanical treatment has yielded satisfactory results, so that we are compelled to look for other methods. Among the best are the operations of Lorenz and Hoffer; the former the bloodless, and the latter the bloody. I have had but little experience with the bloodless operation, but on one occasion started in to do the bloodless and wound up by doing the bloody. I had a very sad experience in this case, and the patient recovered with an anchylosed joint, so I would not advise trying to combine the two operations. The technique is very simple, although the Lorenz operation is more complicated than the present one. Dr. Bradford advices that you begin your incision just below the anterior superior spinous process of the ilium, and cut downward and outward, making a longitudinal incision through the fascia lata. The anterior margin of the tensor vagina femoris comes into view, and you cut right down upon the capsule at once. You then make an incision into the capsule and cut around until you can turn the head of the bone out, separating it absolutely. Failing to follow the proper point will cause much difficulty in finding the acetabulum. It is only by having such men as Dr. Sherman give us their results that we can begin to formulate our ideas.

Dr. SHERMAN, in closing—As to the substitution of the bloody for the bloodless operation, the injury that is done to the tissues in endeavoring to reduce the dislocation without incision is very great. I have found hematoma in one case at the end of a week, and in every case, ecchymosis results. If the laceration of the soft parts can be avoided, the bloodless operation will give a more satisfactory result. It is necessary to regard anchylosis of the limb in a good position as preferable to permanency of the dislocation, and the usefulness of the limb is so much greater that it is worth while, as unreduced dislocations become progressively worse.

THE TIME TO OPERATE IN APPENDICITIS.

Presented to the Section on Surgery and Anatomy at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1897.

BY H. D. NILES, M.D.

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For a long time the appendix and adjacent parts were distinguished as being the only structures in the human body where the known presence of pus was not an indication for its removal. Ignorant of the etiology and pathology of the inflammatory diseases of this region, restrained by exaggerated ideas of the hazards of intra-peritoneal surgery, few surgeons had the courage to oppose this violation of a generally recognized law; and for many years, under various names, appendicitis received only those treatments that were purely medicinal, symptomatic and palliative, while the results depended alone upon the unaided reparative efforts of nature.

But since the pathologist has conclusively proven that from the very nature of the disease, neither internal medications nor external applications *can* have any direct effect upon this disease, and that all clinical evidence to the contrary must of necessity be deceptive, and since modern methods and perfected skill have so nearly annihilated the dangers of intra-peritoneal surgery, the surgical conception of appendicitis, based upon the teachings of pathology, has gradually supplanted the old empiric treatment, which never has had any support, except unconfirmed clinical testimony.

In taking this all-important step toward the proper management of an infected appendix, some have hesitated and wavered and are still reluctant to rely entirely upon the principles of modern surgery to guide them in their treatment, for they maintain that there *are* times and there *are* cases where an infected appendix should be left within the body. Others regard this as a purely surgical disease, to be treated *always* in accordance with those surgical laws that hold good on other parts of the body. Hence, a consideration of the time to operate in appendicitis always includes a discussion of the following question: *Are experienced operators ever justified in recommending that an infected appendix be permitted to remain within the abdomen longer than is needed to make the necessary preparation for its removal?*

Arrayed on either side of this question are earnest, sincere men of the widest experience, whose opinions and judgment we all value and respect. So long as this uncertainty and marked difference of opinion exists in the treatment of this very frequent, acute and grave disease, we can not hope to command or merit the full confidence and trust of the laity nor to be quite free at all times from doubts and misgivings ourselves, as to our choice of plans. Until we are approximately in accord upon the main points of treatment, appendicitis will continue to be a proper subject for thoughtful consideration and reconsideration, alone and in discussion.

In this paper I shall express as clearly and as briefly as I can the line of reasoning and thought that has led me to believe that *the known presence of an infected appendix within the abdomen is always an indication for its removal.*

Appendicitis has its origin in an infection effectually imprisoned within the appendix, out of the possible reach of external or internal medication or natural drainage, cut off from the cecum by inflammatory occlusion of the canal and separated from the nearest external outlet by the parietal peritoneum, several layers of muscles and fascia and the skin. This infection may be mild and limited, free from danger and causing but little distress; or it may be most acute and virulent, producing local and general changes most dangerous to life and health. We are, as yet, unacquainted with any signs or symptoms that enable us to distinguish positively one grade or stage of inflammation from another. This infection is in a useless organ that is easily and safely removable ordinarily, but which lies in dangerous proximity to tissues which are certain to be involved if the infection spreads. This extension of the infection we are absolutely powerless to arrest except by surgical removal of its source. Treated medicinally or left to nature, 10 per cent. of all cases end fatally in the primary attacks and more than 25 per cent. die ultimately. The causes of death are systemic infection, peritonitis or obstruction of the bowels, hence the surgeon's aim is to prevent, arrest or limit septic absorption and local and diffuse infection of the peritoneum. Local infection may occur either by direct extension of the inflammation or by sudden rupture of the distended or softened appendix, permitting the escape of its septic contents. Diffuse peritonitis may be produced by the same causes, or by leakage from an appendiceal abscess. A very large proportion of those who do not die suffer from recurrent or chronic appendicitis, or from the more or less remote effects of bowel or omental adhesions which occur to some extent in nearly every case.

These, I believe, will be accepted as fair statements outlining the conditions which confront us in every case of appendicitis.

In coping with these conditions those who retain their faith in modern surgical principles can not consistently recommend delay in operative measures, unless it can be satisfactorily explained just why—in this particular instance—they should deviate from a generally accepted law of surgery. I take it that the advantage of any departure from general principles should be clearly proven by abundant and substantial evidence before an exceptional plan be adopted, and that in the absence of such proof the safer plan would be to follow the rules of surgery that hold good in other parts of the body.

It is asserted by a majority of those who oppose immediate operation in all cases, that this infection had best be left within the abdominal cavity, unless it is apparent that the disease has not extended to or beyond the outer coat of the appendix; or that a local abscess has formed, with walls of requisite strength (in which case the abscess is opened, but the appendix is not removed if it form a portion of the abscess wall), or that all acute symptoms have subsided without pus formation, viz., between the attacks. They maintain that by thus limiting their operative procedures they lessen the danger of post-operative general peritonitis. They also claim that as for various good reasons they operate less frequently, they have fewer distressing post-operative sequelæ, less suffering and hospital expense, with equally as good results as those who operate promptly. Moreover, many assert that their experience and such clinical testimony as they can gather go to prove that 75 per cent. of all cases do as well as or better when trusted to nature than when treated surgically. The proofs offered in sup-

port of these opinions are largely made up from personal experiences, statistics, quotations from authorities and the testimony of patients.

The chief reasons for operating promptly in appendicitis, regardless of the stage, character or extent of the disease, presence of pus or tumor, or state of the pulse or temperature, may be briefly stated. First, such a course is in harmony with the generally recognized law that the presence of infected, devitalized tissue and pus in the human body is an indication for its removal by the most direct and safest route.

Second, as in this region nature's reparative methods involve the formation of more or less dense and extensive bands of adhesion which may impair or annul the functions of nearby vital organs, this mode of repair should not only be interrupted early, but should be followed by the breaking up of all adhesions and the removal, as far as possible, of all debris.

Third, if this course was pursued in all cases as soon as the diagnosis was made, experienced operators would not expect the mortality to exceed 2 per cent. Moreover, the 98 per cent. or 99 per cent. would be free from the apprehension of future attacks and the distressing effects of bowel, omental and mesenteric adhesions. Such results are believed to be infinitely better than those of any other plan of treatment.

Fourth, prompt operators believe that complete work is attended by less immediate danger and gives better ultimate results, while one of the rules of the delay operators is to leave the abscess wall intact, and frequently the gangrenous appendix is a part of this wall. Such incomplete work promises an imperfect result even if the patient lives.

Fifth, even if certain stages of the morbid process were known to present more favorable conditions for operative procedures we have no means, with our present knowledge, of recognizing these various stages or even of assuring ourselves that they will ever occur. *For it is impossible to accurately determine the exact pathologic changes taking place under a rigid or distended abdomen, by any combination of local or general signs or symptoms.* Few men of experience today would care to stake their professional reputation or their patients' lives upon their ability to discover a protruding enterolith about to escape into the peritoneal cavity, or to determine the exact strength of every part of an abscess wall. Yet those who wait accept for themselves and their patients these chances; for upon the safe imprisonment of this enterolith or other infection, and the maintained strength of this wall during their period of waiting depends the life of their patient.

In reply to the remaining statements of the oppositionists the prompt operators declare, first, to advise that operation be done before the disease has extended beyond the appendix is *equivalent* to operating at the earliest possible moment after a diagnosis is made; second, to operate between attacks is an admission that the patient has been unnecessarily exposed to the dangers of previous attacks, and to choose this time is only better than to wait for future attacks; third, it is unreasonable to suppose—if an operation is needed at all—that neglect, delay and incompleteness are the factors likely to eliminate post-operative or other complications and obtain better results than from prompt, complete work; fourth, their death rate can not be computed and must of necessity be a matter of guess work since many of their so-termed cured patients still carry within their abdomens the remnants of a disease which may light up at any moment; fifth, it is admitted that 75 per cent. of all cases of appendicitis do not die during an attack, even if not treated at all, but we are surely not justified in accepting a plan that results in the imperfect recovery of 75 per cent., when at our disposal is a plan that insures the complete recovery of 98 per cent.; sixth, it is inconsistent to expect that a mortality which is conceded to be due to "too late operation" will be reduced by a treatment that means further delay.

Furthermore, it is maintained that the evidence supporting the claims of those opposed to immediate operation, while not lacking in amount, is not of a character to lead us to depart from the general laws of pathology and surgery. The testimony of patients, the report of clinical observations by competent men, statistics, and even the unsupported opinions of honest, experienced men, have a relative value, but when in opposition to the teachings of pathology that value is very much less than when it is in confirmation of such teachings.

The testimony of patients, like that of all unqualified witnesses, is almost always unreliable. Then, too, we get only the testimony of the living, who naturally feel bound to testify to the efficiency of any treatment connected with their recovery. The fatal cases might tell a very different story if they could reappear upon earth. The clinical observations of competent men certainly deserve some consideration, but we should remember that these observations to be of much value must extend over a period of several years in each case, or be strengthened by the assurance that no remnants of diseased tissue remain in the abdominal cavity. Unless the appendix be removed, the fair way to report a recovery from one attack would be something like this: "This patient has survived an attack of appendicitis, but we have every reason for believing that he will always be in danger of future attacks until the appendix is removed, and each attack renders the next one more likely to occur and the operation more difficult." Let each of those who have faith in the teaching of clinical experience ask themselves the following questions: How many operations have I seen that in my own judgment were done too early? How many have I seen that proved to be too late? How many deaths and how much suffering has come under my observation that I honestly believe could have been prevented by timely and proper operations for appendicitis? Which of these chances shall I give my patient?

Statistics that include a large number of cases, with a description of the specimen removed, have a decided value, but no statistics, however voluminous, can be very convincing if they report under the head of recoveries, cases that still carry within their abdomens the original cause of the disease liable at any moment to light up a serious, perhaps fatal inflammation? The unsupported statements of so-called authorities are often quoted to bolster up this or that view of the treatment of appendicitis. But this question has been prominently before the profession for consideration a number of years and such arbitrary statements, unless they appeal to our reason and common sense, can not, or at least should not, materially influence us either for or against operative interference.

The above statements, to my mind, outline the chief points of this controversy that are deserving the consideration of those who are studying this question, not for the purpose of defending a pet theory, but in

the hope of deciding upon a treatment for appendicitis that shall promise the most for their patients in the saving of lives and suffering. It is customary, however, to introduce into these discussions other objections to the immediate operation, to which I will now make the briefest possible reference, for I believe that they should have little or no weight in influencing our conclusions. The assumption that a prompt operator advocates a laparotomy for any and all right-sided pains is as absurd as the belief that an infective inflammation can originate in the pericecal cellular tissue. It would appear to me quite immaterial whether what seems to us the best plan of treatment for a dangerous disease be named "radical" or "conservative," or whether those who propose or practice it be called "extremists" or "old fogies," "seekers after notoriety" or "arm-chair theorists." It can not concern the patient or doctor whether the plan of treatment be of ancient origin or the latest product of modern thought so long as it is effective. It can not be important whether it gives nature or surgery the leading or subordinate part in the cure so long as it promises the best results. Nor can I believe that we should be induced to advocate or practice an inferior treatment in order that poorly qualified and inexperienced men may safely employ it.

It has been said that to be known as one who always operates in appendicitis means to forfeit a certain amount of prestige and popularity with the public. This, if true, is the public's misfortune, I think, and it should rest with them to correct it. "Wholesale laparotomizing," "mutilating operations," "epidemic of ovariotomies" and other similar, meaningless and extravagant expressions are rarely found in any logical argument. Neither these nor any other unfair reflections upon our ability or sincerity should deter us from pursuing that course which our best judgment dictates. In appendicitis we have a condition, not a symptom nor a group of symptoms, to treat; this condition is an infection of the appendix and perhaps the surrounding structures, which when treated medically or left to nature has been shown to have a death rate in first attacks of 10 per cent. and an ultimate death rate of 25 per cent. The application of the same surgical principles that hold good in other parts of the body, viz., the prompt and complete removal of the infection promises a perfect recovery in 98 per cent. of all cases. The question is whether any treatment involving delay in the removal of this infection promises to reduce this 2 per cent mortality. The waiting for a more favorable time to operate means, as I comprehend it, the subjecting our patients to ever-present real dangers while we wait for those fancied (at least unproven) favorable conditions which may never arise, and which, should they arise, we are unable to recognize, all for the purpose of doing a more or less incomplete operation that must promise a proportionately more or less imperfect result.

Eye-Strain.—Dr. Aaron Howell in the *Medical Bulletin* (Vol. xx, No. 4), gives the following as symptoms of eye-strain: Pain in the temporal region and in the back of the head and neck; red eyelids, also an inability to see at a great distance or to read at a long time; blurred vision, strabismus, a tendency to photophobia, twitching of the eyelid, along with sick-headache and dizziness when shopping, riding or attending places of amusement. He refers to chorea and other neuralgic symptoms as a possible outcome. The remedy lies in the proper adjustment of lenses by a painstaking and intelligent adviser.

THE TREATMENT OF INOPERABLE SARCOMA WITH THE MIXED TOXINS OF ERYSIPELAS AND BACILLUS PRODIGIOSUS.

IMMEDIATE AND FINAL RESULTS IN ONE HUNDRED AND FORTY CASES.

Presented to the Section on Surgery and Anatomy, at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

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(*Concluded from page 395.*)

The remaining personal cases worthy of special note will be found in tabulated form.

HISTORY OF THE MORE IMPORTANT CASES SUCCESSFULLY TREATED BY OTHER SURGEONS.

Case 1.—Inoperable sarcoma of pectoral region and axilla. Entire disappearance after seventy-eight injections. Patient perfectly well two and one-half years later.

This case is of the greatest interest, for it alone, unsupported by a single other case, would prove the specific action of the toxins.

This case, female, aged 42 years, was a patient of Drs. M. Storrs and R. H. Griswold of Hartford, Conn., and was treated by them under my direction. Her paternal grandmother died of cancer of the breast. There was no specific or tubercular history. The patient had been well up to October, 1895, when she noticed a lump in the left pectoral region. It grew rapidly and soon extended into the axilla. On Dec. 15, 1995, it had become so large and adherent to the axillary vessels that after a consultation of several prominent surgeons it was considered inoperable. A portion was removed and examined microscopically by Dr. R. Griswold, and the diagnosis of spindle-celled sarcoma was made. The diagnosis was further confirmed by Drs. Dunham and Buxton, pathologists to the New York Cancer Hospital, and finally by Prof. Wm. Welch of Johns Hopkins University. Seventy-eight injections of the mixed unfiltered toxins were given during the next three months, and at the end of this time the tumor in the pectoral region and axilla had entirely disappeared and the patient had regained her normal weight, having lost twenty-four pounds since the appearance of the disease. The patient was presented by me before the New York Surgical Society in November, 1896, in perfect health without a trace of tumor or induration in breast or axilla. She is still perfectly well, with no sign of recurrence, two and one-half years later.

Here we have a rapidly developing and hence highly malignant sarcoma, pronounced inoperable by four surgeons, the diagnosis confirmed by three pathologists of the highest reputation, and moreover, the type of tumor, one that Professor Welch states cannot be mistaken for anything else, entirely disappear under nothing but the injections of these toxins, and, more than all, remain well for nearly three years.

Case 2.—Inoperable spindle-celled sarcoma, involving the palate and fauces; entire disappearance under the mixed filtered toxins, the patient well and free from recurrence four and a half years later. This case was treated by Dr. Walter B. Johnson of Paterson, N. J. I saw the patient, in consultation, before the treatment was begun, in October, 1893, and can bear witness to the desperate condition that existed. The diagnosis of spindle-celled sarcoma was confirmed by careful microscopic examination, although the condition was so typical of malignant disease that the clinical diagnosis was practically certain. Improvement was at once evident, and the growth steadily disappeared until no trace remained. The patient has continued in perfect health up to the present time, four and a half years after the treatment.

A full report of this case, with illustrations, may be found in the *Medical Record* of Nov. 17, 1894.

Case 3.—Spindle celled sarcoma of the calf of the leg; entire disappearance under twelve weeks' treatment with the mixed toxins. Case No. 1, of Dr. L. L. McArthur, Attending Surgeon, St. Luke's Hospital, Chicago, Ill. The patient, female, aged 40 years, entered St. Luke's Hospital in the spring of 1894, for a removal of a tumor of the leg. Operation showed the tumor to spring from the dense fascia covering the muscles and calf. Although a very radical operation was performed, recurrence was regarded as probable, in the event

Table of personal cases in which the sarcoma disappeared, entirely or nearly, with final result.

No.	Sex, age.	Date.	Nature of Disease.	Treatment.	Result.	Remarks.
1	M., 35	May 4, 1891.	Recurrent spindle-celled; neck and tonsil (inoperable).	Repeated injections; living bouillon cultures, erysipelas, four months.	Tumors nearly disappeared; general health restored.	Well six years later.
2	M., 40	April, 1892.	Round-, oval- and spindle-celled; back and groin (inoperable).	Living cultures; later, mixed toxins. (L.)	Entire disappearance; well three and one-fourth years.	Recurred in abdomen; fatal.
3	M., 17	Jan., 1893.	Spindle-celled; abdominal; wall and pelvis (inoperable).	Mixed toxins, filtered. (L.)	Entire disappearance.	Well May, 1898, five years.
4	F., 29	Oct., 1893.	Spindle-celled; abdominal wall (inoperable).	Mixed toxins, filtered and unfiltered. (B.)	Entire disappearance.	Well June 1, 1898, four and one-half years.
5	F., 17	Jan., 1894.	Recurrent spindle-celled; popliteal space and leg.	Toxins, unfiltered and filtered. (B.)	Entire disappearance, 1½ years; recurred later; amputation; further recurrence in gluteal region; treated with toxins up to present time.	Well June 15, 1898.
6	F., 34	June, 1894.	Inoperable epithelioma of chin, lower jaw, floor of mouth.	Toxins, unfiltered, three months.	Disappearance.	Well four years.
7	F., 16	June 23 1894.	Inoperable spindle-celled sarcoma of chest wall.	Toxins, unfiltered, four months. (B.)	Entire disappearance.	Perfectly well June 23, 1898.
8	M., 24	March, 1894.	Very large chondro-sarcoma; ilium.	Toxins, unfiltered, six weeks. (B.)	Disappearance; recovered general health.	Recurred, 7 months; died one year later.
9	F., 27	Oct., 1894.	Round-celled sarcoma; mesentery and gall bladder.	Toxins, unfiltered, five months. (B.)	Disappearance.	Well three years later.
10	M., 38	May 11, 1895.	Inoperable sarcoma; sacrum (clin. diagnosis).	Toxins, unfiltered, six months. (B.)	Entire disappearance.	Well three years later.
11	F., 20	Feb. 18, 1896.	Recurrent spindle-celled sarcoma of hand.	Toxins, unfiltered and filtered, two months. (B.)	Disappeared two months	Slight recurrence two years later; yielded to further treatm't.
12	F., 18	Jan. 17, 1897.	Inoperable spindle celled, of abdominal wall.	Toxins, unfiltered, six weeks. (B.)	Entire disappearance.	Well May, 1898.
13	F., 5	Feb., 1897.	Recurrent round-celled; lower lip.	Toxins, unfiltered, six weeks. (B.)	Disappearance.	Well June 1, 1898.
14	M., 40	Aug., 1897.	Recurrent spindle-celled; parotid and neck.	Toxins, unfiltered, three months. (B.)	Entire disappearance.	Well June 1, 1898.
15	F., 40	Nov., 1895.	Spindle-celled; intra-abdominal.	Toxins, unfiltered, 6 weeks; 2 months; 2 months. (B.)	Entire disappearance; recurrence; later nearly disappeared.	Well November, 1897.
16	M., 14	Apr. 10, 1897.	Rapidly growing inoperable sarcoma of iliac fossa (clin. diag.).	Toxins, unfiltered, several months. (B.)	Very rapid improvement; tumor disappeared.	Well June 1, 1898.
17	F., 32	Jan., 1897.	Thrice recurrent sarcoma of the parotid; mixed-celled.	Toxins, unfiltered and filtered; several doses; six months. (B.)	Marked decrease in size; nodule excised.	Well June 24, 1898.
18	F., 59	Jan. 20, 1895.	Angio-sarcoma; recurrent; inoperable; breast.	Erysipelas and B. prodigiosus; serum 6 mos.; toxins filtered, few weeks. (B.)	Decrease in size; excision.	Well May, 1896.
19	M., 37	Nov. 4, 1894.	Eight times recurrent; spindle-celled sarcoma of chest wall (soft parts).	Toxins, unfiltered and filtered, with introductory small doses; 3½ yrs. (B.)	Marked inhibitory action; two or three small nodules removed.	Well June 1, 1898.
20	M., 55	June, 1893.	Large inoperable round-celled sarcoma of iliac fossa.	Toxins, unfiltered and filtered; at intervals; nearly one year. (B.)	Tumor nearly disappeared.	Well one year later, when lost sight of.
21	M., 32	Nov., 1895.	Large, inoperable, recurrent, tumor of upper lip. Diagnosis: Fibro-angeioma.	Toxins, unfiltered, one month. (B.)	Tumor disappeared.	Well two years later.

(B.)—Prepared by Dr. B. H. Buxton. (L.)—Prepared by Dr. Alexander Lambert.

of which amputation was advised. Seven months later, September, 1894, the patient returned to the hospital with a local recurrence the size of half an egg bulging from the calf of the leg. Inasmuch as the patient was several months pregnant, it was thought best to try the effects of the mixed toxins before resorting to amputation. The treatment was continued for twelve weeks with the result that the tumor entirely disappeared. Microscopic examination showed the tumor to be a spindle-celled sarcoma. The patient remains well at present, three years afterward.

Case 4.—Osteo-sarcoma of the lower end of the radius, three times recurrent; entire disappearance of the tumor under three months' treatment with the mixed toxins. Case No. 2 of Dr. L. L. McArthur. This patient, adult, male, was admitted to the Michael Reese Hospital for recurrence in the cicatrix of a bony tumor situated in the lower end of the radius. The patient stated the growth had been pronounced sarcoma by Dr. C. Fenger. Amputation having been refused, the tumor had been removed as thoroughly as possible. Four months later recurrence followed and a second operation was performed by Dr. Edmund Andrews of Chicago. The original diagnosis was confirmed. Rapid recurrence followed. A third surgeon, Dr. D. A. K. Steele, was consulted, and again amputation was advised and refused. The patient then consulted Dr. McArthur, who regarded the diagnosis as undoubtedly correct and also advised amputation. The patient absolutely refused operation, and under these conditions Dr. McArthur agreed to try the effect of the mixed toxins. The treatment was begun in April, 1895, and the injections were kept up for three months, with the result that the tumor had entirely disappeared at the end of this time. The patient has remained well up the present time, June, 1898; Dr. McArthur states there has been no recurrence. Although no microscopic examination was made in this case, the fact that the tumor promptly recurred after several operations, renders the clinical diagnosis of such well-known surgeons scarcely open to doubt.

Case 5.—Osteo-sarcoma of tibia, round celled (giant); three months; treatment with the mixed toxins; entire disappearance; well three years afterward. Dr. John E. Owens of Chicago reported the following successful case before the Illinois State Medical Society, May 1, 1897: The patient, a boy aged 7 years, received an injury to his leg in July, 1894. In December, 1894, a tumor appeared at the site of the injury in the upper portion of the tibia. In March, 1895, an exploratory operation was performed showing a tumor involving the medullary canal. Microscopic examination was made by Dr. E. R. LeCount, Pathologist to Rush Medical College. His report showed the tumor to be a round-celled myoloid or giant-celled sarcoma. "On account of the very high vascularity," he stated, in his report, "judging this to be a rapidly growing tumor, its malignancy is unquestioned." Amputation of the thigh was advised and, in fact, everything was prepared for operation, when Dr. Owens, at my suggestion, decided to try the toxins for a brief period. The treatment was begun April 10, 1895, and continued until July 10 at intervals of one to two days. The affected leg gradually returned to its normal size, the tumor disappeared; and in a recent letter, dated June 10, Dr. Owen states that the patient is still in good health, free from recurrence, more than three years afterward.

Case 6.—Extensive inoperable, intra abdominal sarcoma, successfully treated with the mixed toxins. Case of Dr. Herman Mynter of Buffalo; a full report of which may be found in the *New York Medical Record* of February, 1895. The patient was a girl, 12 years of age. There was a history of local injury two or three months prior to the development of the tumor in the abdomen. The condition of the patient when the treatment was begun was desperate. Diagnosis was confirmed by exploratory laparotomy, and microscopic examination of a portion of the tumor showed the growth to be a spindle-celled sarcoma. The tumor entirely disappeared and the patient, according to a letter from Dr. Mynter, dated May 25, 1898, is in good health at present. It is very important to note that this cure was effected through the systemic action of the toxins, all of the injections having been made in the thighs. The duration of treatment was six weeks; large portions sloughed off and came away through the abdominal incision.

Case 7.—Inoperable spindle-celled sarcoma of the uterus, successfully treated with the toxins. Case of Dr. R. M. Stone, Omaha, Neb. My former paper contained a brief reference to this case, which was subsequently published in full in the

TABLE OF CASES TREATED BY THIS METHOD BY OTHER SURGEONS WITH COMPLETE OR PARTIAL SUCCESS.

No.	Reference.	Sex, age.	Date.	Nature of Disease.	Treatment.	Results.	Remarks.
1	Johnson, W. B., N. Y. Medical Record, Nov. 17, 1894.	M., 16	Oct. 31, 1893.	Very extensive spindle-celled sarcoma of palate and pharynx, extending to vocal cords.	Toxins filtered; 3 months' treat. (local), (B.)	Entire disappearance . .	Well May, 1898, 4¾ years later.
2	Mynter, Herman, N.Y. Medical Record, Feb. 1895.	F., 12	July 22, 1894.	Very extensive inoperable, spindle-celled intra-abdom. sarcoma, involving mesentery, omentum and cecum.	Toxins filtered; 2 months; in thigh.	Entire disappearance . .	Well June 1898, 4 years later.
3	McArthur, L. L., Chicago Med. Record, 1895, p. 120, and pers. communication.	F., 40	Sept., 1894.	Recurrent spindle celled sarcoma, calf and leg.	Toxins unfiltered, 12 weeks. (B.)	Entire disappearance . .	Well May, 1898, 3½ years.
4	Ibid. Personal com.	M., adult	May, 1895.	Three times recurrent sarcoma of radius; clin. diag., amputation advised by Dr. Christian Fenger.	Toxins unfiltered. (B.)	Entire disappearance . .	Well, 3 years
5	Ibid. Personal com.	F. 5½	1895.	Round celled sarcoma of antrum and pharynx and neck.	Toxins unfiltered. (B.)	Gained in weight from 87 to 69 pounds; tumors disappeared.	Later, fatal recurrence.
6	Owens, J. E., Prof. Surg. N. W. Univ., Chicago; New Orleans Medical and Surg. Journal, July, 1897.	M., 7	Apr. 10, 1895.	Typic (round) giant-celled sarcoma dep't pathology, Rush Med. College.	Toxins unfiltered. 63 injections. (B.)	Entire disappearance; gen. health improved.	Well May, 1898, 3 years.
7	Barber, C. R., Syracuse. Personal communication.	M., 35	1894.	Very extensive intra-abdominal sarcoma, recurrent, inoperable; mesentery and omentum; no microscopic examination.	Toxins unfiltered.	Immediate and rapid improvement; entire disappearance of tumors; gained 40 lbs. in weight.	Well 4 years later.
8	Storrs, M., pers'l communication, N.Y. Surg. Soc. Report Annals Surg., 1897.	F., 42	Dec., 1895.	Inoperable spindle-celled sarcoma of pectoral region and axilla.	Toxins unfiltered, seventy-eight injections. (B.)	Entire Disappearance . .	Well June 1, 1898, 2½ years later.
9	Czerny, Heidelberg, Munch Med. Woch., 1895.	M., adult	1895.	Round-celled inoperable sarcoma of parotid, size of fist.	Toxins unfiltered. 18 injections.	Tumor reduced to insignificant nodule, easily excised.	No recurrence, nearly one year later.
10	Stone, R. M., Med. Record, November, 1896.	F., 40	Dec., 1895.	Spindle-celled sarcoma, uterus; recurrent.	Toxins unfiltered, 3 months. (B.)	Entire disappearance . .	Patient well 2½ years later.
11	Packard, Horace. Prof Surg. Boston Uni., "Five Years in Surgery," also personal com.	F., 39	Aug., 1895.	Recurrent spindle-celled sarcoma of parotid.	Toxins unfiltered, 8 months. (B.)	Almost entirely disappeared, remaining small nodule excised Oct. 16, '95.	Well May, 1898, 2¾ years.
12	Ibid.	F., 15	May 4, 1896.	Inoperable endothelial sarcoma of pelvis.	Toxins unfiltered. several wks. (B.)	Entire disappearance . .	Well May, 1898, 2 years.
13	Ibid.	F., 55	May, 1895.	Inoperable intra-abdominal sarcoma, spindle-celled.	Toxins unfiltered, (B.)	Entire disappearance . .	Well May, 1898, 2 years.
14	Warren, I. C., Prof. Surg. Harvard Med. School, Bost. Med. and Surg. Jour., Dec. 26, 1896.	M., adult	1896.	Round-celled sarcoma of neck, recurrent.	Toxins unfiltered, twenty-eight injections. (B.)	Entire disappearance . .	Slight return 6 mos. April, '98, recurrent tumor in neck.
15	Matague, H., Gaz. Méd. de Liège, May 14, 1896.	1	1895.	Recurrent sarcoma of neck. . . .	Toxins unfiltered, 3½ months.	Disappeared entirely . .	Slight return in six months.
16	Ibid. Gaz. Méd. de Liège, May 14, 1896.	. . .	1895.	Recurrent sarcoma of neck size fetal head.	Toxins unfiltered, 3 months.	Decreased ⅔ in size. . . .	Died of shock following removal of rest of growth.
17	Moullin, Mansell (London). Lancet, Feb. 5, 1898.	M., 28	Dec., 1895.	Inoperable tumor of iliac fossa; clin. diag., sarcoma.	Toxins unfiltered. 2 months. (B.)	Disappearance.	Well 2 years later.
18	Moullin, Mansell (London). Lancet, Feb. 5, 1898.	M., 58	Nov., 1896.	Large tumor, left iliac fossa and flank; sarcoma, clin. diag.	Toxins unfiltered, 2 months.	Disappearance.	Well 2 years later.
19	Moullin, Mansell, (Londo..), Lancet, Feb. 5, 1898.	M., 28	Oct., 1895.	Large inoperable tumor of hip, four months' duration, severe pain.	Toxins unfiltered several weeks.	Disappearance.	Well 1 year later.
20	Wilcox, Sydney, N. W. Journ. Homeopathy, Jan. 1896.	F., 30	June 1, 1895.	Myxo sarcoma, round-celled. left forearm.	Toxins unfiltered 2 months. (B.)	Tumor disappeared . . .	Well Nov. 3, 1895.
21	Shied, A. Marmaduke, British Med. Journal, Jan. 25, 1897.	F., 44	April 3, 1896.	Inoperable round-celled sarcoma of breast, myelon recurrent 6 mos. after operation.	Toxins unfiltered, 17 days.	Nodules disappeared, breaking down, slough.	Died of pyemia, staphylococcus infection, fluid sterile.
22	Williams, D. H. L., Rochester, N. Y. Personal communication.	F., 37	April, 1896.	Inoperable intra-abdominal sarcoma, involving abdominal wall, spindle-celled.	Toxins unfiltered. 1 month. (B.)	Tumor disappeared, partly by slough, partly by absorption.	Well 2 years.
23	Tilly, R., Chicago. Personal communication.	M., adult	Aug., 1894.	Sarcoma orbit, round-celled. . .	Toxins unfiltered. 3 weeks. (B.)	Entire disappearance . .	Died suddenly few weeks later.
24	Moore, J. A., Helena, Mont. Personal communication.	M., 31	April 4, 1894.	Sarcoma mastoid, size goose egg.	Toxins unfiltered. 2-3 months. (B.)	Entire disappearance . .	Slight recurrence 2 years later.
25	Moore, J. A., Helena, Mont. Personal communication.	F., 31	Jan., 1894.	Supra-clavicular multiple round-celled sarcoma, recurrent.	Toxins unfiltered, 1 month. (B.)	Entire disappearance . .	Return soon.
26	Jackson, J. A., F. L. Lewis. Central Wisconsin Med. Soc. Transactions, 1897.	F., 36	Sept. 1896.	Inoperable sarcoma of breast; clin. diagnosis, Dr. Christian Fenger.	Toxins unfiltered. (B.)	Disappearance.	Died 1 year later, metastatic tumor of rectum.
27	Battle, W. H., St. Thomas' Hospital, London, Lancet, April 9, 1898.	M., 30	June, 1897.	Fibia sarcoma, multiple, arm, axilla, supra- and infra-clavicular pectoral region; microexam. by Shattock.	Toxins unfiltered. 4 months.	Entire disappearance of all except two, and these mostly disappeared.	Case shown Medical Society of London April 4, 1898.
28	Rumbold, T. H., San Francisco Personal communication.	F., adult	Aug. 14, 1894.	Recurrent round-celled, breast.	Toxins unfiltered, 1 month. (B.)	Tumor disappeared . . .	Died of internal metastasis; confirmed by autopsy.
29	Kocher, quoted by Glückmann	F., adult	1895.	Large recurrent sarcoma, pelvis.	Toxins unfiltered. (Tavel Berne.)	Marked decrease in size.	Increase again within a year.
30	Ferguson, H. A., Chicago. Personal communication	M., adult	. . . .	Sarcoma of tibia, round-celled. .	Toxins unfiltered.	Entire disappearance . .	Well June, 1898.
31	Hardenbeagh, D. B., Middletown, N. Y. Personal communication.	M., 48	May 28, 1897.	Inoperable tumor of iliac fossa, attached to ilium; no microscopic examination.	Toxins unfiltered. 3 weeks.	Entire disappearance . .	Well May 15, 1898.
32	Harris, M. L., Chicago. Personal communication.	F., 31	Oct., 1897.	Recurrent inoperable round-celled sarcoma of ovary, involving rectum; very rapid growth.	Toxins unfiltered. 4 weeks; mixed in arm.	Very marked improvement; decrease in size of tumor; final sloughing of entire tumor.	Died Nov. 17 from septic absorption of sloughing tumor.
33	Walton, J. C., Reidville, N. C., Charlotte Medical Journal, May, 1898.	F., adult	May 18, 1895.	Large sarcoma of fibula, amputation of thigh advised but refused by patient.	Toxins unfiltered. 2½ months. (B.)	Entire disappearance . .	Well 3 years later.
34	Moullin, Lancet, Feb. 5, 1898.	F., 29	Oct. 9, 1896.	Recurrent round- and spindle-celled sarcoma of superior maxilla, involving orbit.	Toxins unfiltered, 5 weeks, daily; local.	Tumor sloughed away; apparent cure of local disease, but possible recurrence in tibia.	Dec., 1897, no local recurrence.
35	Zabriskie, F. H., Greenfield, Mass. Personal com.	F., 40	1896.	Recurrent spindle-celled sarcoma, intra-abdominal.	Toxins unfiltered, with intervals of rest, 1 year +(B.)	Tumor almost entirely disappeared.	Patient well July, 1898, nearly 2 years.
36	Roe, John O., President Med. Soc. State of New York. Personal communication.	M., adult	May, 1894.	Recurrent sarcoma of neck and tonsil; "adeno-sarcoma;" inoperable.	Toxins unfiltered. (B.)	Improved rapidly; tumor almost entirely disappeared.	Six months later developed erysipelas of scalp; proved fatal in a few days.

(B.)—Prepared by Dr. B. H. Buxton.

NOTE.—I have incomplete notes of another case of carcinoma of superior maxilla successfully treated.

New York Medical Record, 1896. The patient Mrs. B., aged 46 years, had lost fifteen pounds in weight, the right broad ligament was markedly infiltrated. The disease had progressed so far that hysterectomy was not to be considered—three surgeons who had seen her in consultation, regarding the case as absolutely hopeless. The toxins were begun on Dec. 6, 1895, and continued for two months with the result that the tumor as well as the infiltration of the broad ligament disappeared. The patient regained her usual health. She is at present, June 15, 1898 (two and a half years afterward), in perfect health without any evidence of recurrence. Upward of one hundred sections of the tumor were examined by Dr. W. R. Lavender, Professor of pathology to the Omaha Medical College, who made the diagnosis of spindle-celled sarcoma.

Case 8.—Inoperable sarcoma of the parotid successfully treated with the toxins, Case No. 3 of Dr. Packard. This case has been briefly reported by Dr. Packard in his "Five Years Work in Surgery," published in 1896. The tumor had recurred one year after previous operation. Further operation seeming hopeless, the injections of the mixed toxins were begun in May, 1895, and continued for several months. The tumor gradually decreased in size until only a small nodule remained. This was excised, and without further treatment the patient has remained in perfect health up to the present time, upward of three years.

Case 9.—Intra-abdominal sarcoma successfully treated with the toxins.—Dr. Packard's case No. 2, Mrs. W., aged 55 years, was admitted to Newton Hospital on April 14, 1896. Five years previously an abdominal hysterectomy had been performed. The stump was treated externally. Several weeks before her admission to the hospital in April, 1896, a sinus formed in the region of the old scar. On May 13 an exploratory operation was performed under ether, and a large, friable mass was discovered in the pelvis, suggesting malignant disease. Portions were removed and examined by Dr. Batchelder, who pronounced the growth to be sarcoma. The tumor was very vascular. For some time afterward there was marked tendency to hemorrhage and a constant fecal discharge from the sinus. On May 22, one minim of the mixed toxins was injected into the skin in the vicinity of the sinus. The dose was gradually increased up to 15 minims daily without any increase in pulse or temperature. The treatment was discontinued for two weeks and resumed in July, and continued in slightly increased doses until the early part of August, when the patient was discharged. She had gained markedly in strength and general health, and the fecal fistula had closed and the other abdominal symptoms disappeared. She returned to her home in a neighboring State and one year later reported herself well.

Case 10.—Spindle-celled sarcoma of the omentum successfully treated with the toxins.—Dr. Horace Packard of Boston, has recently sent me the following notes: The patient, male, 58 years of age, was referred to Dr. Packard early in 1898 for the surgical treatment of a painful, movable abdominal tumor, located to the left and a little above the line of the umbilicus. He had emaciated progressively, was able to take but little nutriment, and pain had become constant and excruciating. Exploratory incision was made and there was found a malignant growth of the omentum about four to five inches in length, two to three inches in breadth. There were several secondary nodules in the vicinity. A portion of the tumor was removed for microscopic examination and the wound closed. The specimen removed showed the growth to be a spindle-celled sarcoma. The patient was immediately placed upon the unfiltered toxins, which were continued, with occasional intervals, for three months. Although the doses were small (1 to 2 minims) the reactions were severe, causing marked prostration. After the treatment had been continued for a month, it was allowed a respite of four weeks. The patient's general condition was vastly improved and the tumor had appreciably diminished in size; the pain had entirely left him and he looked and seemed well. When last seen by Dr. Packard the patient seemed in excellent health, and the tumor could be scarcely felt.

Case 11.—Inoperable spindle-celled sarcoma of the uterus, recurrent—entire disappearance within nine months after the treatment was begun. Patient of Dr. H. T. Williams of Rochester, N. Y. The patient, female, aged 37 years, Canadian by birth, married nine years, no children. Menstruation began at 16, regular and normal in amount. Dysmenorrhea for past twelve years. The patient was first seen by Dr. Williams, April 16, 1891. The patient noticed a growth in the abdomen six years ago, since which time it has gradually increased in size. Her health was fair. Diagnosis: uterine fibroid. May 31, 1891, abdominal median incision. Large smooth fibroid of uterus; sound passed nine inches. Numerous adhesions in view of which latter it was considered best not to hysterectomy but to try the effects of spaying. Both tubes and ovaries, which were large and cystic, were removed as close to the uterus as possible. Catgut used to ligate pedicles. Recovery from operation without disturbance. Nov. 21, 1891, menstruation more regular and much less profuse. Uterine sound passed five inches. May 19, 1892, periods every four weeks and almost normal in amount; sound passed four and one-half inches. Patient had been gaining flesh. She was then lost sight of until March, 1896, when she again came to Dr. Williams complaining of pain in right side and saying that she felt another tumor. Examination showed a large, hard tumor about the size of two fists in right side of abdomen, and upon vaginal examination it appeared to spring from right horn of uterus. The tumor was not very movable and seemed to be attached to abdominal muscles. March 24, 1896, exploratory incision through abdomen revealed a large, elastic tumor apparently originating in right pedicle, extending into abdominal muscles and adherent to intestines. As operation would have had to be a very extensive one, involving the removal of a large amount of abdominal muscle with the growth and probably resection of the intestines, it was not deemed possible that the patient could survive it. A portion of the tumor was removed for microscopic examination, which showed it to be a spindle-celled sarcoma. The abdominal wound was closed with eight silver wire sutures and healed by first intention. The tumor increased rapidly in size and a month after exploratory incision it projected several inches above the surface of the abdomen. April 24, 1896, 3 minims of the mixed toxins of erysipelas and bacillus prodigiosus were injected into the center of the tumor. The reaction was very great, patient had a severe chill, went into collapse, and brandy with strychnia, with salt solution per rectum and hypodermically, were required before she rallied, which she did a few hours later. Temperature had risen to 106 degrees but after a few hours had dropped to 100 degrees and next day was normal, but patient felt very much exhausted.

April 28, 1896, 1 minim of the toxins was injected into the tumor about an inch below the point of first injection. The symptoms of April 24 were repeated, but less severe, the temperature rising to only 103 degrees. The patient declared she would rather die than have any more injections; however, she was finally persuaded to permit another injection of 1 minim of the toxins on May 1, 1896. Reaction was less severe, temperature reaching but 102 degrees. On May 5, 3 minims were injected, causing a temperature of 103 degrees and slight chill. On May 8 and 14, 3 minims were given and were followed by considerable reaction, but temperature was not high. May 18, 1896, 4 minims were injected, causing a very severe prolonged chill and a temperature of 105.4 degrees F. The patient felt extremely weak for some days afterward. After each of the previous injections a slight erysipelatous blush had appeared around the point of injection but disappeared after a few days. This time an area of three to four inches in circumference of bright red color appeared. Poultices were applied to it and in a few days it turned black in the center and a slough about the size of a silver half dollar came away, leaving a hole of two to three inches in depth in center of tumor. The patient positively refused to have any more of the toxins used. This opening discharged for several months but the tumor grew rapidly smaller. Eight months later it had entirely disappeared. The patient was examined by Dr. Williams one year later and no trace of growth could be detected; she has gained considerable flesh and felt well. She is at present June, 1898, two years later, in good health.

Case 12.—Intra-abdominal sarcoma successfully treated with the toxins. Case of Dr. Chas. R. Barber of Rochester. Patient, male, born in Germany, 35 years of age, well developed, began to have indigestion in October, 1893. In the spring of 1894 he began to emaciate rapidly, and shortly afterward a mass was found a little above and to the right of the umbilicus and settled in the epigastrium. In May, 1894, his weight had fallen from 180 to 125 pounds. On June 16, 1894, exploratory operation was performed by Dr. Barber. He states: "It proved to be a case of cancer—probably sarcoma, on account of rapid growth—of the omentum, involving the surrounding parts, forming attachments with the intestine, bladder and parietal peritoneum." A large portion of the cancerous mass was removed. The patient made a rapid recovery and for a few weeks seemed better. On August 1, six weeks later, the growth began to increase rapidly in size on the right side of the cicatrix and over the right lobe of the liver, involving the abdominal muscles. On August 25 a second operation was performed and apparently all of the diseased tissue removed. Recurrence very quickly followed in the same region and further operation was considered hopeless. Injections of the mixed toxins of erysipelas were begun; a distinct chill followed every injection, accompanied by a rise of temperature. Dr. Barber states: "I soon had the gratification of seeing the

tumor diminish in size and gradually disappear altogether." The patient regained his normal health and strength and has been working ever since. He was well and free from recurrence in June, 1897, or three years after treatment. Unfortunately, the portion of the tumor sent to the microscopist for examination was lost; yet the clinical history of the case, the very rapid development of the tumor and the rapid recurrence, make it almost impossible to doubt the correctness of the diagnosis of sarcoma.

Case 13.—Osteosarcoma of the fibula successfully treated with the toxins. The following is a brief abstract of a case just reported at the meeting of the North Carolina Medical Society, May, 1898, by Dr. J. C. Walton of Reidsville, N. C.

The patient, adult, female, was first seen in 1895, with a tumor enlargement in the region of the calf of the right leg. There was considerable pain and discomfort. The pain was first noticed in March, 1894, and the lump appeared in June, 1894. The swelling gradually increased in size and the tumor became more painful, until in the spring of 1895 she was unable to bear her weight upon the leg. Examination showed the calf of the leg to be the site of a large, hard, smooth, globular tumor, with distended veins over the entire surface. The leg measured over two inches more than the other. There was no involvement of the joint. The patient's general condition had been good up to a short time previous to the development of the tumor. As the growth increased in size, her general health failed, on account of the pain, loss of sleep and anorexia. A well-known Virginia surgeon had pronounced the disease sarcoma, and had advised amputation of the lower third of the thigh. Inasmuch as the patient absolutely declined operation, the injections of the mixed toxins were begun by Dr. Walton on May 18, 1895, the injections being made deeply into the tumor. The initial dose was one drop, which was gradually increased to four, but the patient was never able to bear more than this. The temperature reaction varied between 102 and 105 degrees, accompanied by the usual symptoms. The injections were kept up until August 1, or two and one-half months. The tumor had gradually become circumscribed, and in July had begun to soften and break down. On December 13 an incision was made and the broken-down mass removed with a curette. The tumor was very vascular and the hemorrhage profuse. In December and January a second and third curetting was made and a large quantity of marrow-like, gelatinous substance, together with a portion of the shaft of the fibula, was removed. A severe hemorrhage followed a week after this operation. From this time on the patient's health rapidly improved, the cavity began to fill with healthy granulations and in a short time she was discharged cured. This was in January, 1896. Dr. Walton states that the patient is at present, May, 1898, in good health, able to walk without a cane, suffers no inconvenience except a little from the loss of bone, and presents a normal appearance.

In the discussion upon this case, Dr. Robinson, who had seen the patient, stated that there could be no doubt in the mind of anyone who had seen the case, that it was sarcoma. No pus had been found during the entire course of the treatment, and this, together with the fact that the joint was not involved, would seem to indicate beyond a doubt that the disease was sarcoma and not of tuberculous character.

Case 14.—Mr. C. Mansell Moullin, surgeon to the London Hospital, in a most complete paper read before the Harveian Society of London, on Feb. 3, 1898,[1] reviews the whole subject of the treatment of malignant tumors with the toxins. The paper shows a thorough familiarity with the literature of the subject, and his conclusions have the additional weight of being based upon an extended personal experience with this method of treatment. The toxins employed were in part prepared by the British Institute of Preventive Medicine and in part obtained from Dr. Buxton of the Loomis Laboratory of New York, and similar to those employed by myself. They were used in ten cases, with three successes and two deaths. In one of the fatal cases, Mr. Moullin states that the case was undoubtedly not a suitable one. The patient was a man over seventy years of age, with an enormous and very vascular sarcoma of the femur. His condition was very feeble, and during the month that elapsed before the fluid could be obtained his condition became much worse. The first injection was without result. The second, two days later, caused a rigor which was followed by such prostration that the patient never rallied. The tumor was a very vascular one, pulsating freely, and the injection on the second occasion in all probability entered directly into a vein. In the second fatal case the patient died from acute pyemia, under conditions curiously like those of a case recorded by Mr. Marmaduke Sheild.[2] In both cases the fluid was carefully tested by a thoroughly competent observer and proved to be absolutely sterile. In both instances, another patient who was being injected from the same bottle, at the same time and even on the same day, experienced nothing more than the ordinary reaction. The explanation of death in these cases offered by Mr. Moullin is undoubtedly the correct one. In both cases the ulcerating parts of the tumor were full of pyogenic micro-organisms, probably staphylococci. It is well-known that micro-organisms that are comparatively harmless, either from the conditions under which they have been living or from the smallness of their number, may become intensely dangerous if they are associated with or aided by the presence of other organisms or the injection of other toxins. The staphylococci were there, inert or almost inert. The injections of the toxins, either by increasing their virulence or by diminishing the resistance of the tissues, or by both, were responsible for the pyemia that followed. Of the eight remaining cases one was a carcinoma of the breast which showed no change. Another was a lymphosarcoma of the groin in a young man who, after two injections, declined further treatment. A third was a similar growth in the neck of a man 65 years of age, which showed no effect from considerable doses of the toxins. Two improved slightly, and in three the tumors disappeared. The following is a brief abstract of these five cases:

Case 14.—(Moullin). A man, 28 years of age, was admitted to the London Hospital in November, 1895, with a tumor in the groin, which had been noticed for four weeks. The right iliac fossa was occupied by a firm swelling, fixed not fluctuating, rather tender on pressure, extending to within an inch of the median line and deeply on the inner surface of the pubes. The injections were begun in December, the initial dose being one-half minim, which was steadily increased to eight minims. Rigors occurred on several occasions. At first the tumor increased in size and the skin over it became red and tender; by the middle of January a diminution in size was plainly noticeable. Then it increased again concurrent with several rigors. After that there was a decrease in size until in March it had almost entirely disappeared. The treatment had been discontinued by the end of February, 1896. The patient's weight increased from 138 pounds to 145 pounds, and he was well two years later.

Case 15.—(Moullin). A man, 55 years old, admitted in November, 1896. Examination showed a large, irregular swelling of firm consistence not connected with the skin or abdominal muscles occupying the left flank. The tumor had first been noticed four weeks before. The injections were commenced in December, beginning with one-half minim and kept up until the end of January, 1897, causing several rigors. The growth continued to increase. At one time it appeared to be acutely inflamed. After that it slowly diminished in size until it could scarcely be felt. The patient was discharged in March, in a much better condition than when he entered, his general health being perfect. This case remained well up to the date of the paper, Feb. 3, 1898.

Case 16.—(Moullin). A man, 38 years of age, was admitted in October, 1895, with tumor of the hip. He had been sick for four months. The upper end of the thigh was occupied by an irregular swelling that filled up the space between the iliac spine and the trochanter, and moved with the limb. The iliac glands were enlarged. The limb itself was inverted, adducted and apparently shortened. Injections were commenced in October, the doses being increased rapidly up to nine minims, which produced rigor. After that several such doses were borne without effect until a third attack of rigor followed on injection of but five minims. The patient complaining of weakness the treatment was discontinued. The swelling of the hip decreased gradually. The glandi disappeared. The movements of the hip became more free, and inversion and adduction were hardly noticeable. A year after his discharge there was no recurrence.

Case 17.—(Moullin). A woman, 29 years old, was admitted on the 7th of October, 1896, suffering from a tumor of the right temple. Six years prior to her admission a swelling had appeared over the root of the right upper canine tooth. This had gradually increased in size. In December, 1894, the right superior maxilla had been removed at the London Homeopathic Hospital. Microscopic examination had proved the growth to be a mixed round and small spindle-celled sarcoma. Three months before admission the patient had noticed a swelling in the right temporal region. This had slowly increased in size and caused her much suffering from shooting pains. The swelling was of very firm and uniform consistence and non-fluctuating. Injections with toxins obtained from the British Institute of Preventive Medicine were begun October 9. They were given into the arm in doses increasing from one-half minim to twelve minims, and continued almost daily. There

[1] The Lancet (London) Feb. 5, 1898.
[2] Brit. Med. Jour., January, 1897.

was occasional slight reaction but no rigor or headache, and the growth steadily increased in size. On November 7, three minims of a fluid sent over by Dr. Coley were injected into the tumor, causing a rise of temperature to 101 degrees, cold feet and vomiting. The next day a dose of five minims was injected, being followed by distinct rigor, headache, vomiting and pain in the back. The injections were continued daily and gradually increased to eight minims, each treatment being followed by a rigor. On November 15 the tumor had definitely altered its shape. The next day, the patient objecting to further injections into the tumor, nine minims were injected into the arm without effect. The following day, the patient, having given up hope of improvement from the treatment, left the hospital. Mr. Gordon Brown reports that after the patient left the hospital the growth increased in size involving the malar bone, causing considerable swelling in the zygomatic fossa and leading to exophthalmos. There was intense pain in the head. The eyeball protruded and sloughed away. In November the tumor had become much smaller, but there was an apparent recurrence in the left tibia. In December, 1897, Moullin found that the sarcoma at the outer angle of the orbit had disappeared entirely. There was a deep hollow in the temporal fossa. The eyeball was gone and the orbit empty. The left leg was much swollen and there was apparently a tumor in the upper part of the tibia.

Case 18.—Inoperable sarcoma of the breast successfully treated with the toxins.[1] I am indebted to Dr. J. A. Jackson of Sun Prairie, Wis., for the report of the following case: Female, aged 36 years, with sarcoma of the breast of seven years' duration. The patient was seen in consultation by Dr. C. Fenger of Chicago, in September, 1896, and the growth at that time was pronounced inoperable. The cervical and axillary glands were enlarged, and the disease was also thought to have involved the femur. Dr. Fenger counseled against operation, and advised the mixed toxins of erysipelas and bacillus prodigiosus. The treatment was begun on the 25th of September, 1896, and continued until October 2, the highest reaction being 100.5 per cent. The tumor softened and discharged slightly. On the 30th of September she had nausea and vomiting. The vomiting continued almost constantly until October 9th. The vomiting was only controlled by hypodermic injections of morphin. From this time on the tumor shriveled up, the glands grew smaller, the ulcer healed and the appetite improved. On February 8, 1897, four months later, she had a well-marked attack of erysipelas of the face. After a few days it subsided, and the ulcerated surface cicatrized, leaving a smooth scar and the glands normal in both cervical and axillary regions. A metastatic tumor developed in the rectum about six months later which finally caused death.

Case 19.—Case of Dr. D. B. Hardenberg, Middletown, N. Y. (Unreported.) The patient, male, 48 years old; merchant. Family and previous personal history good. The patient first consulted Dr. Hardenberg April 21, 1897, giving the following history: Several months he had suffered from almost constant pain located in the left hypochondriac region. On April 10th the pain and disability had so far increased as to confine him to bed. Physical examination, April 21, showed a hard swelling in the left iliac region, firmly adherent to the left ilium and abdominal wall. The tumor extended one inch above the crest of the ilium, was sharply defined on its upper border, and extended nearly to the median line. Examination by the rectum, negative. The patient complained of constant pain, and in the evenings the temperature generally ranged between 101 and 101.5 degrees. In view of the duration of the tumor (3 to 4 months) and its close relation to the ilium, probable diagnosis of sarcoma with septic degeneration was made. May 1st, the temperature continued slightly increased, reaching 102.5 degrees, redness and signs of breaking down becoming apparent. The patient was etherized and a free incision made one and one-half inches above and parallel to Poupart's ligament. About two ounces of purulent fluid were evacuated, and a large-sized rubber drainage tube inserted. The discharge was very moderate. The mass decreased in size, but the pain continued unabated. During the next four weeks persistent efforts were made by means of poulticing and the administration of alteratives to promote the breaking down of the tumor. At the end of this time the tumor had increased in size and was so firmly adherent to the ilium that it seemed to form part of it; the upper border was very sharply defined; the measurements of the tumor at this time showed that it extended three and one-half inches from the anterior superior spine toward the umbilicus, four inches toward the pubis. The case being regarded as hopeless, the mixed toxins were begun May 28, 1897, the initial dose being one-half minim. No reaction followed. The second dose of 1 minim produced a marked chill and a temperature of 104 degrees. After the third injection a marked decrease in size was noted, the dimensions having become reduced by 1 inch. The toxins were continued in gradually increasing doses until June 18th. The tumor rapidly and progressively diminished in size until it finally disappeared. Two weeks later the patient had apparently recovered his usual health and was able to walk without difficulty, having been confined to his bed for three months.

In a letter from Dr. Hardenberg, dated June 1, 1898, he states: "The patient is now in excellent health, with no signs of recurrence." As regards the diagnosis, Dr. H. writes: "I regret that I did not remove a portion of the tumor at the time of the operation for microscopical examination, but I had not sufficient hope of a successful issue to be induced to do so. The clinical history, situation and general characteristics of the tumor are, I believe, good evidence of its nature. At all events, the toxins caused rapid disappearance of a trouble that neither time nor ordinary treatment made any impression upon."

This case bears a striking resemblance to the successful cases recently reported by Moullin; in fact, there is less reason to doubt the diagnosis of this case than there was in those of Moullin.

Case 20.—Inoperable recurrent sarcoma of the ovary; marked improvement under the mixed toxins; rapid necrosis of entire tumor; death from septic absorption (unreported). Case of Dr. M. L. Harris, Chicago, Ill. The patient, American, female, aged 31 years, unmarried. Family history good. In June, 1897, she first noticed discomfort and slight pain in the lower front of abdomen. Four weeks later the family physician discovered a tumor in the lower part of the abdomen; it grew very rapidly and caused disturbance of the bowel. Examination, Sept. 18, 1897, showed the following: General condition of the patient fair, heart and lungs entirely normal, abdominal tumor arising from the pelvis, extending midway from symphysis pubis to umbilicus, lying somewhat more to the right side, movable, but not freely so. The uterus was crowded anteriorly and slightly to the left side, moving with the tumor, which was solid. Operation, Sept. 22, 1897, median celiotomy. Large solid tumor originating from the right ovary, adherent to uterus, rectum and pelvic wall, was found. Uterus and appendages removed with the tumor. Gauze packing was necessary to arrest hemorrhage. Microscopic examination of the tumor showed it to be a large, round-celled sarcoma. The patient recovered well from the operation. October 11, difficulty in moving bowels. Examination per rectum showed a recurrent mass in the posterior part of the pelvis pressing upon and involving the anterior wall of the rectum. October 13, tympanites became marked; no bowel movement was attainable. October 14, tympanites intense. Rectum high up seemed virtually occluded by the pressure of the rapidly growing, recurrent mass. Colotomy was considered with a view of giving temporary relief, yet it seemed dangerous from the extreme distention. No gas passed per rectum. It was finally decided to try the mixed toxins. October 14, at 4:30 P.M., 1 minim was injected into the arm; no apparent reaction. October 15, at 6:30 P.M., she expelled gas with some fecal matter. At 10:30, 2.5 minims of the mixed toxins were injected into the arm. No reaction. October 15, 4 P.M., 5 minims of the mixed toxins were given; temperature arose 1.5 degrees; bowels moved and considerable gas was expelled. The patient rested comfortably. October 16, at 11 P.M., another 10 minims; 1.6 degree rise, reaction, temperature 100. Bowels moved several times; gas freely expelled. Tympanites had practically disappeared. (Dr. Harris adds: "I could only attribute the lessening obstruction of the bowel and the disappearance of the tympanites to the effect of the toxins, causing the shrinking of the tumor.") October 18, lower angle of abdominal wound reopened so that the tumor could be seen. It was found to be the size of an average cocoanut. The toxins were thereafter given daily in doses up to 40 minims, the injections always being made subcutaneously in the arm. Very little reactions followed the injections. October 31, pulse was 86; temperature 98; bowels moved freely, almost naturally. November 6, it was noticed that the tumor had become black and was evidently sloughing, fecal matter coming through the wound. November 8, the tumor remained black and sloughing, and there was a bloody watery discharge. The patient now began to show symptoms of septic absorption from the immense sloughing, which involved the entire mass and opened into the rectum. The patient grew weaker, dying November 15.

Dr. Harris states that all injections of the toxins were made in parts remote from the tumor, in the arms and sides of the body; no injection was made into the tumor itself. Only once

[1] This case was briefly reported at the meeting of the Central Wisconsin Medical Society, March, 1897, by Dr. L. B. Lewis.

did anything like a reaction follow the injections. On October 26, after an injection of 24 minims, there was a chill with a temperature of 103 degrees, pulse 150. A few days before the tumor began to slough the patient was sitting up in bed daily, eating fairly well and having good bowel movements. This unpublished case is reported at some length for the reason that it has an important bearing upon the question of the systemic action of the toxins: inasmuch as no injections were made into the tumor, it furnishes complete proof that the action of the toxins is systemic as well as local. It further shows the danger connected with the rapid breaking down of a large intra-abdominal sarcoma. Whether the result would have been different had the injections been given in smaller doses it is hard to say; it is possible that if the degenerative process had been slower the products might have been disposed of either by absorption or by external discharge, as happened in the preceding case of Dr. Mynter.

Case 21.—Recurrent spindle-celled sarcoma, intra-abdominal. The following case was treated by Dr. Frank H. Zabriskie of Greenfield, Mass., who has kindly permitted me to report it. The patient was a woman aged 43, with good family and personal history. In the latter part of 1895 she noticed a hard swelling in the lower part of the abdomen; this had steadily increased in size. In July, 1896, with the assistance of Dr. Zabriskie, I removed a large tumor, the size of a child's head, situated behind and to the right side of the uterus and apparently starting behind the peritoneum. Careful microscopic examination was made by the pathologist of the Greenfield Hospital, who pronounced the growth a spindle-celled sarcoma. A specimen was examined independently by Dr. B. H. Buxton, Pathologist to the New York Cancer Hospital, and the diagnosis was confirmed. About four months after the operation a recurrent tumor of considerable size was found at the site of the primary tumor. This grew rapidly, and in November, 1896, the mixed toxins were begun by Dr. Zabriskie and continued three times a week for about three months. The tumor decreased markedly in size. In July, 1897, I examined her and found a hard tumor in the region of the left broad ligament, about the size of a goose egg. I advised another attempt to remove it by operation, but the patient would not consent. The toxins were continued by Dr. Zabriskie two or three times a week in moderate doses (not enough to produce a chill) and with occasional intervals of rest. In June, 1898, I again examined the patient and could find only the merest trace of the tumor which was present the year before. Her general health was perfect.

Case 22.—Multiple fibrosarcoma, successfully treated by very small doses of the toxins injected subcutaneously remote from the tumor. W. H. Battle (London *Lancet*, April 9, 1898, p. 998) presented before the Medical Society of London, on April 4, 1898, the following case:

The patient, male, aged 30 years, was admitted to St. Thomas Hospital, London, Dec. 21, 1897, service of Mr. McKellar. The patient was a well developed, muscular man, with a history of having had syphilis six months before; three or four months prior to admission into the hospital a lump had appeared in the right arm. The tumor was painful. Later, several other swellings developed in the arm and axilla. Still later a tumor appeared in the subclavicular region beneath the pectoral muscle. The movements of the arm became limited and the arm itself gradually became swollen. Two weeks before admission a swelling was noticed about the right clavicle and another just to the right of the sternum; the right arm was swollen and edematous; superficial veins were dilated and tortuous. The tumor above the clavicle was the size of a hen's egg, while below the clavicle there was an elastic tumor of considerable size, underlying the pectoralis major and pressing this muscle forward. The tumor was of irregular shape, fixed to the deeper parts, but did not involve the pectoralis. In the axilla were two glandular tumors, the size of tangerine oranges, with numerous others of smaller size. The patient's general condition was good. Iodid of potash was given for a time, without any improvement resulting. Portions were removed from the sternal and subclavicular tumors and examined by Dr. Jenner and Mr. Shattock, who pronounced the growth to be a fibrosarcoma with giant cells. Small doses of the mixed toxins of erysipelas and bacillus prodigiosus (one-half minim) were given every other day, injections being made, not into the tumors, but subcutaneously into the arm. The treatment was continued from January 21 to March 21, two months. Iodid of potash was discontinued on March 6. From March 21 to April 4 (the day the patient was exhibited) 1 minim of the toxins was administered every other day. Patient was much improved in general health, and examination showed only two small swellings remaining, one at the site of the sternal tumor, which was reduced to one-third its original size, and the other under the clavicle had become only a flat, limited hardness in the costa-coracoid membrane above the pectoralis minor $1\frac{1}{2}$ x $1\frac{1}{4}$ inches in area. The other tumors had disappeared.

This case is one of the most remarkable yet reported, for two reasons: first, it furnishes additional proof of the view maintained by myself, that the action of the toxins is systemic as well as local; second, it shows that most remarkable results can be obtained by means of very small doses without any of the dangers and discomforts that accompany the severe reactions.

Summary of results in cases of other men employing same method.—Of 35 cases in which the sarcoma entirely or nearly disappeared 10 were round-celled, 10 were spindle-celled, 5 were based on clinical diagnosis alone, 5 were based on clinical diagnosis and history of recurrence after operation, 4 microscopic examinations made, but type of sarcoma not given; 1 endothelial sarcoma.

Of these 35 cases 26 disappeared completely; 2 others decreased so much that only an insignificant node was left and this was easily excised (one of these cases was well three years, the other was well one year when last reported.)

Final results.—Of 10 cases of spindle-celled sarcoma in which the diagnosis was confirmed by microscopic examination, 6 were well two to four and three-fourths years after treatment, (3 of them over three years). Of the round-celled 2 were well one to three years; the case of endothelial sarcoma two years; of the 5 cases in which the clinical diagnosis of sarcoma was supported by a history of recurrence, 2 cases are well three years, 1 case was well two years. Of the cases that rest on clinical diagnosis alone, 3 are well two years, 2 are well one year. Of the total 35 cases 14 cases were well over two years, and 6 cases well over three years. In 2 of the 35 cases death occurred during the third and fourth week of treatment, after the tumors, both round-celled sarcoma—had been entirely destroyed. In 1 case (Shields') death was due to pyemia of staphylococcus origin, the infection occurring at site where tumor had sloughed away. In the other case death resulted from septic absorption from too rapid necrosis of very large round-celled sarcoma in the pelvis—here also outside infection undoubtedly occurring. In one case recurrent sarcoma of neck and tonsil. The patient developed erysipelas of scalp, six months after beginning of treatment, when apparently cured of the sarcoma. The treatment with the toxins possibly rendered the patient peculiarly liable to accidental infection.

Recurrence after having once disappeared under the treatment.—In seven cases recurrence took place after the tumor had disappeared. In six cases this occurred within a year, in one case at the end of two years. Three of these cases were round-celled, one mixed-celled, one sarcoma of neck, (type of cell not given) and two sarcoma clinical diagnosis. In four of these cases the recurrence was *local* and in three *metastatic*: one in lungs, one in rectum, (primary sarcoma of breast in both cases) and the third (Moullin's case) regarded as a probable recurrence in tibia, the primary tumor having been in superior maxilla. A careful study of the case however gives one reason to believe that this swelling in the tibia was not a recurrence but rather an inflammatory tumor indirectly following the use of the toxins. Such swellings I have observed a number of times especially when using the living cultures, and in Moullin's case the tumor of the superior maxilla and orbit having sloughed out, infection could easily have occurred.

ANALYSIS OF PERSONAL CASES AND SUMMARY OF RESULTS.

Total number of cases treated, 140. Of these 84 were round-celled; 21 were spindle celled; 9 were melanotic sarcoma; 2 chondrosarcoma; 12 sarcoma (diagnosis confirmed by microscope, but type of case not given); 6 sarcoma (clinical diagnosis of inoperable sarcoma).

Round celled.—Of these 40, or slightly less than half, showed more or less improvement, as evidenced by decrease in size and cessation in growth. In the great majority of these cases the improvement was only temporary. In 2 cases, however, the tumor entirely disappeared, and in a third nearly disappeared. All of these cases were well when last observed, one having gone over three years, one a year and a half, and a third one year. A fourth became so much reduced in size that it was easily removed. The remaining cases of round-celled sarcoma showed very little, if any, effect from the treatment.

Spindle-celled.—Of the 21 cases of spindle-celled sarcoma, 10 disappeared entirely and all of the remainder showed marked improvement. Of the 10 successful cases, one was well 6 years (living cultures used in this case); one for 5 years, one for 4 years, one for $4\frac{1}{2}$ years, one for $1\frac{1}{2}$ years, one for 1 year, one for 9 months. In 3 cases of spindle-celled sarcoma the disease recurred at intervals of 9 months to $1\frac{1}{2}$ years. In all of the cases the disease yielded to further treatment. Two are now

well, and the third, when last heard from, 9 months ago, was improving.

Melanotic sarcoma.—No case showed more than slight temporary improvement. It should be noted that Dr. George R. Fowler of Brooklyn has had one case of melanotic sarcoma of tonsil and fauces entirely disappear under the mixed toxins, but there was a recurrence two years later which proved fatal.[2]

Mix-celled sarcomas.—Of these, one entirely disappeared and the patient remained well for 3¼ years, when a recurrence took place in retroperitoneal region, which proved fatal in a few months; one became smaller, was removed and the patient is now well over one year; two other cases were improved and two unimproved.

Chondrosarcoma.—In one case—very large inoperable sarcoma of ilium—the tumor disappeared entirely and the patient was well for seven months. Local recurrence then took place, proving fatal.

Osteosarcoma, inoperable.—Clinical diagnosis of only one case; osteosarcoma of sacrum. Tumor entirely disappeared and patient well nearly three years later. One of ilium; tumor disappeared and patient well 1½ years.

One epithelioma of chin and floor of mouth, is well 4 years; one recurrent, inoperable fibro-angioma is well 2 years.

SUMMARY OF FINAL RESULTS.

In 24 cases, partial or complete disappearance of tumors was observed; in 16 cases this was complete. Of these 8 cases were well 3 to 6 years; 9 were well 1½ to 3 years; 4 are well at present, 9 months to 1½ years; 3 died of recurrence, which took place from 7 months to 3½ years after treatment.

The action of the toxins upon the different types of sarcoma.—It is evident from a study of the cases reported that the influence of the toxins varies greatly, according to the type of the sarcoma, being most marked in the spindle-celled, and least in the melanotic variety. It is a significant fact, and one of great importance from a pathologic standpoint, that more than one-half of the cases of inoperable *spindle-celled sarcoma* treated with the toxins have disappeared entirely, and every case showed a marked improvement. Of the cases of round-celled sarcoma about one-half showed more or less improvement, the other half failing to show any effect from the treatment. In many cases the improvement was but slight and temporary in character; the tumors at first showed decrease in size, a little later they remained stationary and then after a longer or shorter interval again increased in spite of the treatment. A considerable number of round-celled sarcoma have disappeared entirely and there is reason to hope for a permanent cure.

The melanotic variety, as I have said, is the least influenced of all. I have treated ten cases of melanotic sarcoma, and in no case was there more than a slight, temporary improvement. It is true that most of the cases were multiple and very far advanced at the time the treatment was undertaken; yet, in one case the injections were begun immediatedly after primary operation, as a prophylactic measure, but this did not prevent speedy recurrence. Were it not for the fact that there is a case of advanced melanotic sarcoma on record which was cured by accidental erysipelas I should look upon this variety as entirely hopeless. The varying action of the toxins upon these different types of sarcoma lends support to the opinion expressed by Bland-Sutton in his book on "Tumors, Innocent and Malignant," which is as follows: "The opinion that all varieties of cancers are due to one cause, assuming cancer to be the product of such agents as produce tubercle, glanders and actinomycosis, it is much more probable that under the term cancer, many tumors are grouped together on account of structural likeness, they have a widely different cause; and the same view holds good for sarcomata and epitheliomata."

[2] Amer. Jour. Med. Sciences, August, 1898, p. 175.

Again, writing in 1892, the same writer states: "Sarcoma[1] is probably the scene of action of a violent and prolonged contest between irritant micro-organisms and leucocytes. I say probably, because, as has been already remarked, pathologists have not yet succeeded in isolating a specific bacteria for sarcomata in general. That such agents will soon be discovered is in the highest degree probable, because in recent years the list of infective granulomata is made at the expense of sarcomata. The structure, mode of growth, infective properties and manner in which these tumors destroy life, clearly coincide with what is positively known in regard to infective granulomata."

I will here repeat the opinion which I have expressed in an earlier paper, first in 1892, that I believe this curative action of the streptococcus of erysipelas and its toxins can only be explained on the ground that sarcoma is of micro-parasitic or infectious origin. Furthermore, I believe this action in itself furnishes very strong evidence in support of this theory. It is a well-known fact that the streptococcus of erysipelas exerts a powerful influence upon tubercular and syphilitic lesions, both due to a specific micro-organism, and as far as we know it has no effect upon any form of tumor not of infectious origin unless we exclude sarcoma and carcinoma. Several links in the chain of evidence have been added during the past two years through the experiments of Juergens of Berlin, and more notably by the more recent researches of Roncali and Sanfelice of Italy. These experiments have been so convincing that so conservative and careful an observer as Dr. Roswell Park in his recent paper on the "Etiology of Cancer,"[2] read before the American Surgical Association, states: "Without going so far as to say that this can be done in every instance and that all cancers are necessarily of parasitic origin, one is justified by these results in at least maintaining that some cancers are positively of such origin. If upon this experimental ground one should infer that all cancers are parasitic manifestations he would do, as will be seen, little violence to the laws of evolution."

Space will not permit me to describe a number of other cases in which the injections of the toxins were followed by marked improvement, but I have given a detailed report of eight cases of sarcoma treated since the meeting of this Association in May, 1895, which totally disappeared under the injections. All save two were inoperable, and these two were both rapidly recurrent, amputation of the right arm being the only operation that could be offered in one, and extensive removal of the lip in the other. The diagnosis in seven of these cases was confirmed by microscopic examination, and in the eighth case the clinical diagnosis was beyond reasonable doubt. If a tumor of four months' growth, starting from the sacrum, can cause a loss of thirty-five pounds in weight, produce marked cachexia, severe lameness in both legs and agonizing pain, and yet be non-malignant, we have certainly discovered some new variety of benign tumor. Moreover, a substance which, injected subcutaneously, in regions remote from the tumor, causes almost immediate cessation of this pain, rapid return of appetite, an increase in weight of twenty-eight pounds in the short space of six weeks, with no other treatment, all this with the gradual decrease in size, and final disappearance of the tumor itself, while the patient con-

[1] J. Bland-Sutton: "Evolution and Disease," London, 1892.
[2] American Journal of Medical Sciences, May, 1898.

tinues in perfect health three years after the treatment, such a substance must possess qualities sufficiently interesting and important to command our most serious consideration. Turning to the other seven cases in which the diagnosis was confirmed by microscopic examination, and in which the tumor entirely disappeared under the same treatment, have we not sufficient evidence to convince the most exacting critic that these toxins do have specific action upon sarcoma, which in a considerable number of cases, proves curative? In addition to my own, I have tabulated thirty-two cases of sarcoma treated by other surgeons, here and in Europe, with the same preparation of mixed toxins with complete or partial success. The successful cases have become so numerous and so well authenticated that the favorite explanation of the critics, "mistaken diagnosis," must now be abandoned. No one can seriously offer such an explanation and still retain a reputation for sound judgment and fair-mindedness.

I have been more than surprised to find surgeons for whose ability and judgment I have the highest regard, find it almost impossible to believe in the efficiency of the toxins of erysipelas, although they fully admit the beneficial and curative properties of accidental erysipelas in malignant tumors. The more we study the life history of pathogenic germs the more certain do we become that their influence upon man or animals is chiefly the result of the toxins they produce; therefore, admitting, as we must, the living streptococus of erysipelas to have a curative action on malignant tumors, theoretically, we have the strongest reason for believing this action to be due to the toxins. The result of practical experience is, as we have seen, in strict accord with theory.

In view of the evidence already presented, is it not more rational to explain the disappearance of these tumors as a result of the specific action of the toxins upon sarcoma, than upon the theory of spontaneous disappearance or of mistaken diagnosis? In regard to these explanations so frequently offered, I would briefly say that after a most careful search of the literature of sarcoma, I have yet to find a single case of spontaneous disappearance in which the diagnosis had been confirmed by microscopic examination. In support of this view I again quote Mr. Bland-Sutton, who, in the discussion of Grieg Smith's well-known paper upon "so-called disappearance of abdominal tumors,"[3] stated that he did not believe in the spontaneous disappearance of any connective tissue or cancerous growth, and the spontaneous disappearance of myomata which had been reported was based on clinical observation alone.

In the discussion of my last paper before the Johns Hopkins Medical Society, April 6, 1896,[4] Prof. William Welch said: "I see no way of gainsaying the evidence which Dr. Coley has brought forward, that there is something specifically and genuinely curative in this method of treatment. A single undoubted cure of a demonstrated cancer or sarcoma by this treatment would be enough to say definitely that the treatment exerts some specifically curative influence, for the spontaneous disappearance of undoubtedly malignant growths of this character is almost unknown. Dr. Coley has, however, presented us positive proof not only of one, but of numerous cases of malignant tumor cured by his method."

[3] Brit. Med. Jour., Dec. 10, 1894.
[4] Johns Hopkins Bulletin, September, 1895.

As I have already stated in a previous paper, it would be somewhat remarkable that these cases should be the first and, thus far, the only ones with both clinical and microscopic diagnosis of malignancy, to disappear spontaneously; and it would be more remarkable still that this disappearance should be coincident with the beginning of the treatment with the toxins. Furthermore, it would be clearly unfair to rule out these cases on the ground of errors in diagnosis without ruling out the cases of cures following operations for sarcoma. Both have been subjected to the same standard of diagnosis, with this important difference, that the cases treated with the toxins have been subjected to *far more severe tests*, inasmuch as in most cases the clinical and microscopic diagnosis were confirmed by a number of the best surgeons and pathologists.

I admit, there is difficulty in always being able to differentiate between a tubercular or syphilitic tumor and sarcoma, but this applies only to round-celled sarcoma and not at all to the spindle-celled variety which, as Dr. Welch has pointed out, must be classed as a genuinely malignant tumor. If the successful cases were confined entirely to the round-celled variety of sarcoma, there might be some little weight to the argument, but inasmuch as the majority of the successful cases have been spindle-celled sarcoma, a type of tumor in which error of diagnosis is practically impossible, the tubercular or specific theory falls to the ground.

I may possibly be asked to explain the unfavorable report upon the value of the toxins of the Committee of the New York Surgical Society in April, 1896, which has been widely quoted, and which, coming from such a distinguished source, could not fail to raise doubt even in the minds of those hitherto disposed to give the method a fair and unprejudiced trial. Up to the present moment, I have made no attempt to answer this report, save by the presentation before the Society of additional cases successfully treated by the toxins. Since this report was submitted, I have exhibited before this Society four cases of inoperable sarcoma—the diagnosis of which had been confirmed in every instance by the highest authorities in pathology—successfully treated by the method in question. The tumors had entirely disappeared, and one of these cases, a spindle-celled sarcoma of the chest wall and axilla, is now free from recurrence nearly three years, the diagnosis in this case having been confirmed by Prof. Wm. Welch of Johns Hopkins University. I have acted on the principle laid down by Oliver Wendell Holmes more than half a century ago: "It is by notes of cases rather than by notes of admiration that we must be guided when we study the revised statutes of nature." And it is by virtue of these by notes of cases that I appeal from the verdict of the Committee of the Surgical Society.

The simple truth is what I have been seeking, and all honest criticism, so far as it tends to aid in arriving at truth, is most welcome. It is Huxley who says to the young investigator, "Veritas praevalebit some day, and even if she does not prevail in his time, he himself will be all the better and wiser for having tried to help her; and let him recollect that such great reward is full payment for all his labor and his pains."

CONCLUSIONS.

A careful study of my own cases, as well as those

thus far treated by other men, justifies, I believe, the following conclusions, which, I may add, are in almost perfect accord with those recently expressed by M. Moullin.

1. A considerable number of cases of inoperable sarcomata, the correctness of the diagnosis of which is beyond question, have entirely disappeared under this method of treatment.

2. A large proportion of these cases have remained free from recurrence more than three years after treatment, the period which has generally been accepted as of sufficient length to justify their being regarded as permanent cures.

3. The different varieties of sarcoma differ widely as regards the manner in which they are acted upon by the toxins. The results thus far show that the treatment is far more successful in the spindle-celled variety, more than half of the cases of spindle-celled sarcoma in which the injections were made having disappeared. Round-celled sarcomata yield far less readily, although a number have been successfully treated. No case of melanotic sarcoma has up to the present time shown more than slight temporary improvement.

4. The action of the toxins upon sarcomata must be regarded as a very rapidly progressing coagulation necrosis with fatty degeneration. This action is not the result of inflammation, nor does it resemble the destructive action of a local escharotic like carbolic acid, but it is rather specific in character, exerting a direct influence upon the tumor cells.

5. The specific action is further confirmed by the fact that several cases have entirely disappeared when the injections were made subcutaneously, remote from the tumor.

6. This method of treatment is attended with a certain amount of risk unless certain precautions be taken. The chief dangers to be guarded against are: *a*, collapse from too large doses of the toxins; *b*, pyemia from insufficient care as regards asepsis, especially in cases where there is a granulating or sloughing surface. To prove that the risks are small I may add that in more than two hundred cases treated personally, death was caused by the injections in but two, and one of these cases was so nearly moribund that no treatment should have been begun.

7. The use of the toxins after primary operation as a prophylactic against subsequent recurrence has much to recommend it. If used in such cases, mild doses should be sufficient, and if proper precaution is observed the treatment should be free from risk.

[I wish to take this opportunity of publicly acknowledging my great indebtedness to Dr. B. H. Buxton of the Loomis Laboratory, without whose skillful labors and untiring zeal these results would have been impossible.]

DISCUSSION.

Dr. McARTHUR of Chicago—Since Dr. Coley first introduced this treatment I have had six cases under careful observation and treatment, and last Christmas day I received a very handsome gift from a man who for two years has been free from any recurrence as a result of this treatment. One must bear in mind that the author only recommends his method in cases that are inoperable, and if he saves only twelve cases the attention of the surgical world should be directed to that remedy in the treatment of conditions for which we have no other recourse. I remember the case of a patient who twice refused to have an extremity amputated, although the diagnosis showed plainly it was sarcoma, and he subsequently recovered. One of my cases was a round-celled sarcoma, and the other a spindle-celled sarcoma, and under the treatment by the toxins the growths disappeared, and the patients are living and well at the end of three years. I believe this method to be almost useless in cases of melanotic sarcoma, but in spindle-celled sarcoma there are very decided reasons for giving it a trial before removing the extremity.

Dr. HARRIS—I would like to ask why the author does not recommend toxins in carcinoma. I have a case under observation where I have been hesitating for several weeks as to what to do in order to obtain information on the subject, and I would like him to tell us why he considers it unwise to use the remedy in carcinoma.

Dr. LEWIS of Topeka—I am very much pleased with the method, especially as I had such a radical cure in one case, which occurred at the angle of the jaw on the right side in a patient of mine two years ago. Seeing that I knew what the result of an operation for such a condition would be, I advised the lady to go to Chicago and have it done there, which she did. Paralysis resulted, as I expected, and I later removed some more of the jaw. Suppuration went on, and eventually the clavicle became involved, and later the tibia, necessitating removal of sections of these bones. Some time afterward she accidentally acquired erysipelas in the face, which healed completely. This stimulated me to use Coley's mixture, and the woman is now well.

Dr. A. D. BEVAN of Chicago—I would like to relate my experience in this connection, as it may throw some light upon the action of the toxins in sarcoma, or in pathologic conditions with which it may be confounded. Within the past year a case of a large gumma of the thigh came under my observation, which was diagnosed at that time as sarcoma, and radical operation was recommended. The patient was loth to submit himself to such radical treatment, and I began the use of the erysipelas toxin. The result was some diminution in the size of the growth, but not to the extent of entire disappearance. I later did an exploratory operation, and removed a section of the tissue, which showed on gross appearance evidence of gumma, and histologic examination confirmed this. He was put upon iodid of potash, and the growth entirely disappeared. He then admitted having had a specific lesion some years before. The idea has occurred to me that possibly, in view of the fact, together with the unanimous opinion of continental surgeons, as well as many of our own countrymen, that in pure sarcoma no results have been obtained by the erysipelas toxin, it may be possible that many of these cases were gumma, resembling sarcoma very closely, which could only be proven by continuous specific treatment.

Dr. COLEY, in closing—I have treated nine cases of melanotic sarcoma, but in no case did I get more than a brief improvement. Up to the present time the results have not been sufficiently good in carcinoma to warrant me in continuing the use of the toxins. The only evidence I have as to the permanency of the cure in these cases is in a case of epithelioma of the mouth. The surgeon had recommended entire removal. The toxins were employed, and the case remained well for three years. As to Dr. Bevan's point, round-celled sarcoma is the only one that could be confounded with gumma. In the opinion of Dr. Welch spindle-celled sarcoma can not be confounded with anything else. As 50 per cent. of the spindle-celled sarcomas have disappeared, which before were hopelessly inoperable, I think the question of mistaken diagnosis is one that can not be entertained.

A SURGICAL TREATMENT FOR HYPERTROPHIED PROSTATE AND HERNIA IN OLD MEN, WITH A REPORT OF TWENTY-EIGHT CASES.

Presented to the Section on Surgery and Anatomy at the Forty-ninth Annual Meeting of the American Medical Association, held at Denver, Colo., June 7-10, 1898.

BY GEORGE W. JOHNSON, B.Sc., M.D.
CHICAGO, ILL.

Concluded from page 400.

Reginald Harrison, F.R.C.S., reports twelve cases of single vasectomy. Seven derived permanent benefit; in the other five, the results were either negative, or it was impossible to trace the patients subsequently. The two cases he reports are as follows:

Case 1.—Patient, aged 69; his prostate was very large. Prominent symptom was extreme frequency of micturition. No catheter used. Amount of residual urine about an ounce, but for some time the patient urinated about every hour, day

and night. Operation was performed with successful result. When the patient was examined five months later, the right testis was found to be atrophied and soft, the left somewhat larger than before. The right side of the prostate underwent shrinkage and was smaller than the opposite lobe.

Case 2.—Patient, aged 72; complained of great frequency of micturition of ten years' duration, eventually amounting to about every two hours, day and night, sometimes oftener. Only a small amount of residual urine, and not dependent on the catheter. The right vas was divided. Six months after the operation micturition was normal in every respect, and although only one vas was divided, considerable shrinkage of the prostate had taken place.

Harrison states that in the majority of his cases micturition became much less frequent after the operation. But in two of his cases operated upon, no benefit was obtained in this respect, and no change was observed in the opposite testicle indicative of hypertrophic activity, and he was not disposed to repeat the operation on the other side. Harrison also reports ten cases of double vasectomy, for five of which he claims great, and believes lasting, benefit. Of the remaining five two have derived but very little benefit; two he was able to trace, and one, rather unusual, he reports as follows:

Patient about 70. In addition to suprapubic fistula consequent upon lithotomy, he had a very large, hard and fibrous prostate. The size of the latter was diminished by dividing the vasa. Two months elapsed between the first and second division. The result occasioned the abandonment of the catheter previously used constantly. Prostate half the size. Fistula also reduced to its smallest dimensions. Although only one and a half inch of each vas was removed, yet the patient retains the necessary desire and power for sexual intercourse. (*British Medical Journal*, 1895, Vol, ii, p. 993.)

Macewen reports three cases in which the prostate was atrophied by bilateral castration.

Case 1.—Aged 64. Feeble and frequent micturation for seven years; required to use the catheter frequently for attacks of retention. Passed urine every one and a half or two hours with much pain; length of urethra nine and a half inches; prostate much enlarged toward rectum, soft and elastic. Residual urine four ounces; urine alkaline and contains a considerable quantity of pus.

Double orchidectomy. Testicles of normal appearance and spermatazoa present. Wound healed without suppuration. In a week patient felt greatly relieved; could retain urine three or four hours. In a month prostate as felt per rectum sensibly smaller; urinated every four hours; quantity of pus diminished. At the end of two months the prostate was less than half its size at the time of operation. Patient passing urine three times a day and once or twice by night. Urine showed only mucous deposit; length of urethra eight and three quarter inches.

Case 2—Aged 84. Symptoms began with complete retention, when urine had to be drawn off. Entirely dependent on catheter; expulsive power of bladder feeble; length of urethra ten and one-half inches. Prostate as felt per rectum much enlarged, hard and flattened.

Double orchidectomy. Microscopic examination showed testicles in a state of involution. Spermatozoa absent. Two weeks later no difficulty with catheter. Size of prostate unchanged. Two months after operation required catheter once in twenty-four hours. The remainder of the urine passed voluntarily. Length of urethra nine and one-half inches; urine clearer, deposit mucus and a few pus cells. Prostate diminished by one-half.

Case 3.—Aged 71. Had urinary difficulty for ten years, seven of which patient was compelled to depend upon the use of the catheter. Difficulty in passing urine with occasional discharge of blood. Before the operation he was obliged to use the catheter every two hours. Length of urethra ten and three-quarter inches. By the rectum prostate was found to be very large and somewhat hard.

Double orchidectomy. Testicles normal; no spermatozoa found. Catheter used without difficulty every four or five hours. Size of prostate per rectum unchanged. Three months after operation use of catheter required every six or seven hours. Length of urethra ten and one-half inches. Per rectum no appreciable change in size of prostate. (*Brit. Med. Journ.*, 1896, Vol. ii, p. 989.)

Colclough reports a case of double vasectomy; death; partial necropsy. Man aged 70 years, of unusual physique and heavy whisky drinker. At the age of 67 prostatic trouble commenced. Irritability of the bladder gradually commenced with attacks every three or four months. The patient then suffered from an attack of acute cystitis; the prostate was enlarged, but with "catheter life" the patient was comfortable, and not until fourteen months later did urethritis commence. The left lobe of the prostate increased considerably; the urethritis became almost constant. Examination of the left epididymis showed chronic enlargement. Vasectomy was performed. Patient survived the operation five weeks. Postmortem showed the prostate gland a simple bag of pus; the bladder was anchored down to the posterior wall of the abdomen; the left kidney bound down by adhesions and felt like a bag of fluid. The right kidney was hypertrophied. The lateral lobes of the prostate oozed with pus; the middle lobe was soft and pendulous. The lower two-thirds of the bladder was sacculated and thickened, with pus in all the sacculations. The right ureter opened normally, while the left was embedded in a mass of new growth. Below this mass was a closed-in abscess cavity with smooth walls. (London *Lancet*, 1897, Vol. ii, p. 658.)

Cabot reports a case in a strong man of 75; troubled five years with difficulty in urinating. He suffered from an attack of acute inflammation of the bladder. Catheter was used regularly. Castration was performed. After the operation patient's mental condition changed decidedly; he became maniacal. Injection of testiculine was tried with successful result, after which patient's mental condition was greatly improved. The prostate was the size of a hen's egg. Third lobe enlarged to the size of a pullet's egg and projected upward and backward into the bladder. On its apex there was a calcareous deposit firmly adherent. Posterior to this, extending forward in the body of the prostate was a cavity with smooth walls, which contained about a teaspoonful of gravel. Bladder wall was thickened and injected, and showed on its surface a few hemorrhagic spots. Kidneys were in a state of acute pyelonephritis, and the right was about one-third larger than normal. (*Annals of Surgery*, 1896, Vol. xxiv, p. 265.)

Morton, F.R.C.S., reports a case of prostatic hypertrophy in which he performed bilateral castration. The patient was 70 years old, with prostate moderately enlarged, hard, nodular, and there were twelve ounces of residual urine. Owing to the catheter not being kept clean, septic cystitis occurred. Both testicles were removed by a small median incision. There was no mental disturbance following. Very gradual atrophy of the prostate took place. A year later, when examined, it was normal in size, but patient still had the same amount of residual urine, although micturition was easier. There was a little pus in the urine which flowed through the catheter just before the bladder became empty. (*Brit. Med. Journ.*, 1896, Vol. ii, p. 995.)

C. Mansell Moullin reports two cases in which castration was performed for enlargement of the prostate.

Case 1.—Aged 74. Prostatic disease advanced. Perustomed the prostate was of enormous size. Patient was accustomed to use of catheter for many years. The urine, in spite of the bladder being regularly washed out, was foul, ammoniacal and loaded with mucus and phosphates. Bladder was so contracted from cystitis of several years' duration that it held only two ounces of urine. Patient wore portable urinal during daytime,

and in spite of morphia suppositories passed urine fourteen or fifteen times at night. Castration was performed. Three days later patient was able to dispense with morphia for two nights; slept an hour and a half at a time, the longest spell previously being three-quarters of an hour. Ten days later, as per rectum, prostate was found much smaller; stream of urine larger; urine was neutral in reaction, and small masses of phosphates were beginning to come away. One month after operation the prostate diminished so much that a metal catheter with ordinary curve passed without difficulty. Size of bladder increased a little; it retained at times four ounces of urine, but micturition was frequent day and night. No morphia was required. The patient frequently slept two hours without being disturbed.

Case 2.—Aged 64. Prostate very large; repeated attacks of cystitis and several attacks of profuse hematuria. Catheter was passed every hour, night and day. Castration was performed. There was no shock, and patient rallied well. Wounds healed. A small quantity of urine passed naturally, the first time in fifteen months. Eight days after the patient had a fainting fit, urine drawn off by catheter, and contained a good deal of blood. Two days later dyspnea and hematuria returned; diarrhea set in, the bowels acting eleven times in twenty-four hours. Death occurred on the eleventh day after operation. Two days previously blood-stained urine was passed at intervals by the urethra. Heart failure was the cause of death. (Clinical Society Transactions, Vol. xxviii, p. 193.)

Griffiths reports a case of enlarged prostate in which bilateral or complete castration was performed. The patient was 74 years of age and had severe cystitis of long duration. Urine contained a large amount of mucus and pus. Micturition was frequent and painful. Catheter was used for two years. Prostate per rectum as large as a medium-sized orange. Castration was performed. Testicles were of full size, and in the left there was a large spermatocele. In each testicle there were active spermatozoa in the seminal tubes. One week after the operation a few ounces of urine were passed without the aid of a catheter. Urine still contained pus, and the patient complained of much pain in the loins. At the end of the second week patient suffered from sleeplessness, becoming delirious. On the fourteenth day after operation the right popliteal artery became blocked, the limb below showed signs of beginning gangrene. Eighteen days after the operation the patient died.

Postmortem: The right kidney was found enlarged from chronic hydronephrosis; suppuration of the distended pelvis; left kidney natural. The bladder was thickened, mucous membrane and right ureter much inflamed. In the right popliteal artery, a mottled and adherent recent clot. The prostate still enlarged, etc. (*Brit. Med. Journ.*, 1895, Vol. i, p. 579.)

Fenwick reports nine cases of double castration (White's operation) upon the enlarged prostate. He considers White's method for the shrinkage of enlarged senile prostate an important addition to our present methods. The reports of cases are as follows:

Case 1.—Test case for shrinkage of the normal human prostate after castration. Entire genitals of a man, aged 45, ablated by the Thiersch-Gould method for extensive epithelioma of the penis. After six months the prostate was reduced to the size of a small bean.

Case 2.—Aged 76. Some years of feeble prostatic micturition. Sudden and prolonged retention. Extreme difficulty of catheterization. Prostate unusually hard and enlarged, especially in the left lobe. Double castration. Three weeks after urine passed voluntarily without the use of catheter. Suprapubic wound closed. Prostate much diminished.

Case 3.—Aged 70. Symptoms of enlarged prostate for six years. Attacks of retention. Slight cysto-prostatitis with mild pyelitis present; inflammatory conditions commencing a year before castration. Per rectum, the prostate was small, but the lateral lobes were much upraised toward the bladder, the vas at the vesical orifice being edematous and translucent. Bladder was fasciculated and pouched. First week after operation the urine cleared, stream improved in force and the pain on urinating diminished. At the end of the third week the prostate was a little smaller, structures of the lobes more fibrous, and the interlobar line had filled up. After three months the stream had markedly improved in force, and only slight variability in power of bladder remained.

Case 4.—Aged 76. Repeated attacks of retention and uremia. Catheterization most difficult. Prostate plump and elastic, only moderately enlarged per rectum. Suprapubic drainage for months without improving the cystitis. Double castration. Cystitis rapidly diminished and voluntary micturition recovered after a fortnight. Prostate slightly smaller at the end of the third week.

Case 5.—Aged 76. Dysuria for five years; not much relieved by catheter, which was passed almost every hour. Irrigation of the bladder had no control over the cystitis. Double castration. Prostate slowly diminished in size. Catheterization only needed every six hours. Cystitis diminished.

Case 6.—Aged 81. Catheter used for nine years, six or seven times during the night and three times during the day. Efforts to pass the instrument were often followed by hemorrhage. Prostate per rectum large and elastic, especially the left lobe. Castration performed. For three days after operation catheter needed twice in twenty-four hours, then four times. At the end of three weeks the prostate diminished and interlobar line of demarkation had filled in; cystitis greatly decreased, but catheter had to be used three times at night.

Case 7.—Aged 60. Dysuria for about three years, with occasional use of catheter, followed by cysto-prostatitis. Prostatic abscess formed and burst into the urethra. Intense pain after every feeble attempt at urination, finally retention. Catheterization for a week. Prostate enlarged laterally and elastic. Castration. Recovery of voluntary micturition on third day; slight shrinkage of the prostate after two weeks. Prostate plump and elastic, diminished one eighth by the fourth week.

Case 8.—Aged 46. Aggravated prostatitis with great local pain, tenderness, severe and intractable neuralgic radiations for ten years; also increased frequency of micturition. Sitting or walking unbearable. Castration. Prostate slightly smaller; as yet no marked relief. Final condition to be reported later.

Case 9.—In progress.

The above cases were in urgent need of relief and were selected from a large series of prostatics for the operation. It will be noticed that they illustrate the use of the operation in four groups of cases: 1, those cases in which castration was performed early, that is, before the vesical muscle had been permanently crippled, but not before it had been impaired; 2, those in which the muscle power had been abrogated by years of catheterization, and in which death was approaching from ascending pyelitis; 3, those in which the ordinary obstructive symptoms were aggravated by chronic inflammatory troubles of the senile prostate; 4, one mid-adult case of incurable chronic prostatitis and vesiculitis which was complicated by unrelievable neuralgic radiations. (*Brit. Med. Journ.*, 1895, Vol. i, p. 378.)

Hayden reports a case of hypertrophy of the prostate gland in which double castration was performed. Patient aged 70. For five years had frequent urination day and night; use of catheter painful and difficult. Straining caused protrusion of several hemorrhoidal masses. Urine ammoniacal. Bladder holds six ounces of fluid; severe cystitis. Prostate twice its normal size. Double castration performed. Twenty-four hours after operation there was a severe spasm of the compressor urethræ muscle, necessitating use of catheter. There was also spasm of the anal sphincter. Fifth day after, much improved. Catheter passed to the bladder. Two months later patient was absolutely free from all pain. Prostate per rectum a little enlarged, but non-painful. (*Medical Record*, 1895 Vol. xlvii, p. 612.

Lilienthal reports a case of enlarged prostate practically cured by castration. Patient, aged 56. For ten years was troubled with frequent micturition; occasional attacks of vesical tenesmus. Catheterized for retention. His urine was alkaline, and there was severe cystitis. The urine contained quantities of

pus and bloody mucus. Prostate per rectum found to be enlarged three times its normal size. Both testicles were removed; signs of slight bilateral epididymitis. First improvement noted was that the patient could pass a stream: cystitis vanished. Four weeks after the use of the catheter was not necessary. Per rectum prostate still enlarged, but only half the size it was before, and feels flaccid. (*Medical Record*, 1895, Vol. xlvii, p. 506.

Rand reports two cases of hypertrophied prostate relieved by castration,

Case 1.—Aged 58. For ten years patient had more or less difficulty in urinating. Five and a half ounces of residual urine were present at first catheterization. Both testicles were removed. Second day after operation he voided twelve ounces of urine voluntarily at different times during the day. Five weeks after, residual urine, off and on, was absent, or in small quantity. Prostate per rectum much smaller, and a small-sized sound drops into the bladder by its own weight.

Case 2.—Aged 69. For nine years patient has had frequent urination. Length of urethra eight inches. Residual urine six or seven ounces at times. Prostate twice its normal size. Both testicles removed. No shock nor pain followed. The size of prostate decreased rapidly within eleven days after operation. (*Annals of Surgery*, 1895, Vol. xxii, p. 217.)

Bryson reports a case of prostatic overgrowth relieved by complete castration. Patient, aged 74. At 56 he gave first evidence of prostatitis. There was dilatation of bladder from obstructive prostatic overgrowth. A cystitis and mild pyelonephritis also developed. Dilatation of heart and pulmonary emphysema supervened. Demonstrable results followed the operation. There was a marked diminution of the enlarged prostate without any change in frequency of urination, without alteration in the amount of tidal urine, and with but slight decrease in the amount of residual urine. In short, complete castration caused complete atrophy of prostatic gland without effecting any change in the chronically inflamed and degenerated bladder, and equally without curing or benefiting a chronic pyelonephritis from extension. (*Journal of Cutaneous and Urinary Diseases*, 1895, Vol. xiii, p. 352.)

Chetwood reports two cases of prostatic hypertrophy after operation: one by vasectomy; the other by castration.

Case 1.—Aged 52. Patient had never had treatment for bladder until his first attack of retention of urine, and catheter was passed for the first time. Prior to this he had frequent urination night and day. About eight months later he was operated on for fissure of the rectum; bladder trouble aggravated after operation, and he was regularly catheterized. Third day after, introduction of catheter was difficult, followed by hemorrhage. Patient was examined ten days later, and per rectum enlarged prostate was found, it being the size of a hen's egg. Third lobe prominent. An incision was made over the external ring, and after separating the vas deferens two ligatures were applied and one quarter inch of the canal between them was resected. For ten days a record was kept of the amount of urine passed per catheter and voluntarily. At first the amount of urine passed by catheter greatly exceeded that passed voluntarily, but toward the end of the week the amount was reversed, so that at the end of the ten days the patient was able to empty his bladder down to about four ounces. The patient became lax in the proper care of himself and his old trouble returned with increased activity. Frequency and urgency of urination became aggravating and attacks of retention more frequent than before. About one year after operation his condition was worse than the previous year. Prostate was the same size and larger. Dr. Chetwood remarks that he is forced to believe that whatever relief he experienced was due to his introduction into catheter life. He says he finds that cases of vasectomy reported by Guion, Cartier, Helferich, Legen, Isnardi, and others, in most of which conclusions reached seemed decidedly negative, while in some instances there seems to be a certain amount of functional improvement with one exception, that there was no decided diminution in the size of the prostate, and it is a question when improvement was noted whether or not it was due to the operation.

Case 2.—Patient, aged 81. Difficulty with urinary function for ten years; several attacks of retention which were relieved by catheter. For four years catheter passed twice in twenty-four hours. Examination showed four to six ounces of residual urine; penile distance nine inches; prostate fibrous and hard, upper distance barely touched with end of index finger, distance being about three and a half inches from below upward, and about three inches laterally. Double castration performed. Recovery from operation uneventful. During the two weeks following relaxation of regular catheterization and bladder irrigation there were symptoms of bladder irritability, turbidity of urine and tenesmus. Prostate was reduced one-third in size and softer in consistency; residual urine was reduced one-third; penile distance half an inch shorter. Five weeks after, urine flowed freely, and catheter not required. Urine, however, quite turbid. Two months after operation the bladder was irrigated at regular intervals; urine passed once every two hours by day; catheter used before retiring at night, by which means patient slept without again rising. Examination reveals that the prostate was reduced one-half its original size, and penile distance from three-fourths to one inch less than length before operation.

Regarding the subject of double castration from various cases reported in the journals of Guion of Paris and Casper of Berlin, Dr. Chetwood thinks that there is little doubt that removal of the testicle produces a certain amount of shrinkage in the prostate gland, but with a varying amount of subsidence of the functional disturbances. He doubts if the operation ever will be popular. (*Journal of Cutaneous and Genito-Urinary Diseases*, 1897, Vol. xv, p. 111.)

Howitz reports four cases of stone in the bladder with hypertrophy of the prostate gland, where a positive diagnosis was impracticable until double castration resulted in atrophy of the prostate, rendering the passage of a stone searcher possible.

Case 1.—Patient aged 70 years; suffering from symptoms of cystic stone, which were intensified for five years; urine contained blood. Per rectum hypertrophied prostate; no stone searcher could be passed. Double castration was performed. Two weeks after operation a stone searcher was readily passed and the existence of calculi easily detected. These were removed by a suprapubic cystotomy and patient recovered rapidly.

Case 2.—Aged 65 years. History of case similar to Case 1. Obstruction produced by enlargement of prostate, permitting passage of small catheter only. Double castration was performed. Fourteen days after a stone searcher was readily introduced and a large-sized calculus found, which was removed by a suprapubic cystotomy. Patient also recovered rapidly.

Case 3.—Aged 62 years; hypertrophied prostate. In addition to the usual symptoms there was great pain in the glans penis, especially after urination. Patient frequently passed blood before and after micturition; two attacks of retention of urine. Double castration preliminary to cystotomy. Ten days after operation stone searcher readily passed; two good sized calculi were found in a pocket posterior to the prostate and were removed by a suprapubic operation. Patient entirely relieved.

Case 4.—Aged 71 years. Pain in the head of penis, neck of bladder and over pubes after passing water. Frequent attacks of hematuria; one attack of ischuria. Prostate much enlarged. Double castration performed. Fifteen days ofter prostate sufficiently shrivelled to allow the introduction of stone searcher, when a calculus was located. It was small and easily crushed. Patient made a slow but complete recovery. (*Therapeutic Gazette*, 1898, p. 73.)

Watson reports three cases of castration for the relief of prostatic hypertrophy.

Case 1.—Aged 58 years. Patient suffered from symptoms of urinary obstruction for several years. Several attacks of retention of urine. After use of catheter symptoms became worse, and before the operation patient had a painful desire to urinate every fifteen minutes day and night. During five days preceding operation he was unable to void urine spontaneously to the extent of an ounce or two in twenty-four hours. Continuous drainage of bladder by a catheter in the urethra was not tried before operating. Both lateral lobes of prostate were markedly hypertrophied, the surface of the right lobe some-

what uneven and in the course of the vas deferens there was a hard, round body the size of a pea, which was movable. Castration was performed through two incisions, one over each testicle. Operation somewhat prolonged by the presence on one side of an encysted hydrocele of the cord, which was dissected out. Immediately after the operation the use of catheter was discontinued. Previous to operation retention followed if catheter was omitted. No change in the frequent or painful desire to urinate. At the end of thirty-six hours, and interval of one hour and a half. On the sixth day patient passed out four ounces of urine at each micturition spontaneously. On the tenth day he was free from pain. Three weeks after operation there was but an ounce and a half of residual urine, which was almost free from pus. Distinct diminution of size of prostate. Patient slept five hours at a time undisturbed. In daytime he is obliged to urinate once in three or four hours. Operation considered a complete success.

Case 2.—Aged 69 years. Both testicles removed through a single median incision. Slight hypertrophy of lateral lobes. The catheter passed nine and a quarter inches before entering the bladder. Symptoms of urinary obstruction for three years; catheter could not be omitted without retention. After operation catheter could not be omitted. The wound did well up to forty-four days after operation; no other improvement noticed; no perceptible change in the size of prostate. So far, case is a failure.

Case 3.—Aged 70 years. Retention of urine. Symptoms of urinary obstruction for several years; overflow of bladder for several months. Patient had double inguinal hernia of long standing. Prostate much enlarged; constant and painful desire to urinate and at times violent bladder tenesmus. During the night following operation patient tore off bandages, got out of bed, and in a violent fit of coughing forced down the herniæ, distending the scrotum and putting the wounds on the stretch. Patient died on the ninth day. No spermatozoa were found at the time of operation. Autopsy showed hypertrophy in the form of distinct fibro-adenomatous tumors, each lateral lobe containing a thickened capsule the size of a horse chestnut. No atrophy of the prostate occurred. Vesiculæ seminales contained no spermatozoa. Bladder the seat of chronic cystitis. Extensive pyelonephritis of both kidneys. (*Boston Medical and Surgical Journal*, 1895, p. 378.)

Kümmel reports three cases of successful operations of hypertrophy of the prostate by excision of the middle lobe of the prostate. This is the same method which is employed by McGill, Harrison, Landerer, Benno, M. Schmidt. First the bladder was disinfected and opened under the simultaneous use of Nelaton's catheter and the use of antiseptic solutions. Then the middle lobe of the prostate was caught with a forceps, drawn upward and slowly singed by means of a Paquelin cautery, or a glowing loop, afterward in several parts, working around as in cutting out the roots of a potato. Then a Hegar's dilator was employed, a permanent catheter introduced, and the wound closed by suture. The mucous membrane was sutured separately with catgut. Nelaton's catheter was removed fourteen days later. The three patients were 65, 70 and 72 years old, respectively. The cure was complete. (*Deutsche Med. Woch.*, 1889, pp. 310 and 314.)

Dr. William T. Belfield reports fifteen cases of severe cystitis dependent on prostatic enlargement, confirmed by autopsies, and says that he found intravesical tumors in eight, three times, as a single myoma or middle lobe, and in five as a more or less complete ring around the vesical orifice. In five, the growths were deeply intraprostatic, and in two diffuse hypertrophy with encysted calculi. In eight of the fifteen cases the prostatic obstructions were removable. Dr. Belfield recommends operation by perineal or suprapubic incision.

In cases of prostatic enlargement where the cystitis is still slight he recommends the use of an intense galvanic current, after Apostoli's method with uterine fibroids. (*Medical Record*, 1888, Vol. xxxiii, p. 272.)

Heine reports four cases of successful cure of hypertrophy of the prostate by parenchymatous injections, consisting of a solution of iodin, with no suppuration after the injections. The solution was kali iodid, 2 drams; tincture of iodin, 2 ounces; and, aqua distil, 6 ounces. Between twelve to twenty drops at a time were used. After a second injection the prostate was considerably diminished in a man of 75 years. Heine claims this as a radical method. In one case the prostate, after the injections, was even smaller than is usual with a healthy man. (Langenbeck's *Archiv für Klin. Chirurgie*, Vol. xvi, pp. 79–95.)

Mayer and Haenal report a case of hypertrophy of the prostate relieved by castration. Patient, aged 70. Prostate much enlarged, with cystitis and ammoniacal urine, tenesmus and toxemia, in whom catheterization was almost impossible on account of the pain produced. Several ounces of residual urine. Several days after operation improvement was noticed. Two weeks later the tonicity of the bladder began to return. In three weeks, urine nearly normal. In six weeks the prostate had shrunken to the proper dimensions and the bladder emptied itself completely, no catheter being required. Patient urinated every four hours; uric acid in reaction. (*Centralblatt für die Krank. der Harn. u. Sexualorgane*, Aug. 25, 1894.)

Helferich reports a case of typical hypertropy of the prostate in a man of 70 years, which he cured successfully by resection of the middle lobe of the prostate. First, sextio alta, then injection of borate solution into the bladder, then excision of middle part of prostate.

Bottini reports three cases of radical cure resulting from hypertrophy of the prostate. This method is invented by himself and consists in galvano-caustic destruction of the growth. The galvano-cautery for the prostate is in form similar to the Soude angulane Mercier tube. (Langenbeck's *Archiv für Klin. Chir.*, Vol. xxi, p. 1.)

Dr. Landerer's method of treating hypertrophy of the prostate consists in the removal of the middle lobe of the prostate, which is in many cases the only hindrance to urination. This method was found by an attempt to remove a supposed vesical calculus; yet it really cured hypertrophy of the prostate. This method is the same as that employed by Volkmann and Thompson for the removal of tumors of the bladder. The scissors used is a combination of polypi scissors and hollow chisel scissors. (*Deutsche Zeit. für Chir.*, Vol. xxv, pp. 5–11.)

Leisrink reports a case of total extirpation of the prostate in order to remove a prostatic tumor. The prostate was enlarged to the size of an apple, almost closing the lumen recti, the mucous membrane of the rectum and the tumor. The adhesions were separated with the finger and the prostate isolated. The small tumors were removed with Cooper's scissors; the wound dressed with iodoform. The next day the wound was washed with thymol solution. Complete success. (Langenbeck's *Archiv. für Klin. Chir.*, Vol. xxviii, pp. 5–78.)

Ricketts reports a case of enlarged prostate relieved by castration. Patient aged 64. On second day after operation the patient urinated with greater ease and pain was slight. He slept four hours at a time during the night, where formerly he had been obliged to urinate every hour, urinating thirty times daily. Condition continued to improve. (*Cincinnati Lancet-Clinic*, Dec. 1, 1894.)

Fremont Smith reports a case of enlarged prostate in which double castration was performed. Patient was an old man with prostatic hypertrophy and cystitis, general infection and threatened uremia. After operation catheter was used twice daily at first. Twelve weeks later patient reported to Dr. Smith that he had gained forty-five pounds in weight and had no symptoms of cystitis. (New York *Med. Jour.*, 1895, Vol. lxi, p. 585.)

Glück and Zeller have made experiments on living dogs and cadavers for total extirpation of the bladder and prostate. They find that dogs can easily stand extirpation of the bladder and prostate. They also sutured the urethra to the abdominal wall. Dr. Sonnenburg has followed this method on a living man with success. *Verhandlungen der deutschen Gesellschaft für Chirurgie*, Vol. x, pp. 158–166.)

Kümmel has produced artificial atrophy of the prostate by castration in eight cases, with the desired result.

Wagener of Leipzig reports that under six operated cases, four persons died of acute mania; while under fifty-three other cases from different countries, no such consequences are reported. (Schmidt's *Jahrbucher der gesemtan medicin*, 1895, pp. 162–3.)

In the German International Congress of Innerliche Medicin, Dr. Reinert of Rubingen gives a new treatment for prostatic hypertrophy. He reports three cases which were considerably relieved by the ingestion of the preparation of the prostate glands of animals. (Trans. Deutscher Congress f. innerliche Medicin, 1895.)

Thomas reports a case in which castration in a patient, 65 years of age, who had had symptoms of prostatic hypertrophy for fifteen years, had caused "considerable improvement." Urination formerly was very frequent, but after operation he was required to urinate only three times a day. Pittsburg *Medical Review*, September, 1894.)

DISCUSSION.

Dr. G. FRANK LYDSTON of Chicago—Dr. Johnson's paper is one of the fairest presentations of what may be termed the unusual method of treatment for hypertrophied prostate—for it is of that portion of his paper particularly that I will speak—that has thus far been presented. He has eliminated what has seemed to me the principal weakness of the successful cases of orchidectomy and vasectomy thus far reported, namely, the effect of rest in producing diminution in the size of the prostate and improvement in the symptoms secondary to prostatic enlargement. It has been my experience that improvement very rapidly occurs in the majority of cases that are put to bed under proper measures of treatment. There is in all instances a greater or less degree of more or less recent hyperplasia due to irritation; this is a plus condition which rest very rapidly subtracts. In many of the cases that have been reported, considerable improvement has been claimed within a short time after the orchidectomy or vasectomy has been performed. In a large proportion of these the accuracy of the report is open to doubt, because of the fact that the rest incidental to the preparation for and following the operation must necessarily have subtracted to a certain degree the superadded conditions of congestion and recent hyperplasia present in such cases. There is no doubt but that vasectomy, and more particularly orchidectomy, are founded upon logical and philosophic principles. It is unnecessary for me to enter into a discussion of the influence of the tastes upon the development of the prostate and seminal vesicles. J. William White has presented this subject so explicitly and fully that there is practically nothing to be added to it. There is no question but that the nutrition of the prostate is controlled or modified to an essential degree by what may be termed the physiologic reflex of the tastes. There is also no question but that removal of these organs will produce an alteration in the nutrition of the prostate which, in the normal organ, results in atrophy, and in abnormal conditions of the organ results in shrinkage of the adventitious tissue and benefit or cure of any abnormal conditions of the bladder which may exist as secondary features of obstruction at the vesical neck. I have found that in the majority of cases there is marked opposition to the operation of castration on the part of patients. Very few patients indeed will consent to the operation until their sufferings become so extreme that they are compelled to submit to obtain relief. Under such circumstances they are willing to submit to almost anything that promises them relief.

The sentimental and cosmetic objections advanced, even by patients who have long since been deprived of the function of the testes, are so strong that the range of cases to which the operation can be applied is considerably narrowed. On this account vasectomy, which, although not as efficacious as castration, is beneficial or curative in a fair proportion of cases, may often be performed where castration would be refused. I believe that castration has too frequently been performed in cases which were by no means suitable to the operation. One thing is certain, that in the presence of a fair condition of the kidneys, no man, whose sexual function has not disappeared, should be submitted to castration. No matter how severe the local symptoms may be, it would be far better to submit the patient to the radical operation of prostatotomy or prostatectomy, or even to perform palliative suprapubic cystotomy and the formation of a permanent suprapubic fistula, than to run the slighting risk of performing an operation for which the patient would not only reproach himself, but what is much more to the point, as far as the reputation of surgery in general is concerned, reproach us. Personally, I am in favor of radical operations upon the prostate itself, performed at an early period, when the operation is not only safe but offers an excellent prospect of radical cure. The trouble has been in the case of prostatotomy and prostatectomy, that these operative measures have only been resorted to in desperate cases. The general practitioner has been led to believe that no operative measures are warrantable in hypertrophy of the prostate, and so we have gone on and on in neglecting our cases until the last moment, when the old man has been operated upon simply because he was going to die anyhow, and then we marvel at the non success of radical operations upon the prostate. I unhesitatingly affirm my belief that the statistics of operations upon the prostate thus far obtainable are well-nigh valueless, so far as showing the results of cases operated on under proper conditions is concerned.

I agree with Dr. Johnson in his statement that a digital examination per rectum should be made in every case where there is a suspicion of prostatic disease. He is correct in his assertion that palliative treatment often cures supposedly grave cases of prostatic disease. In many instances the condition of enlargement of the prostate is one simply of hyperplasia and congestion which lasts for many years before fibroid degeneration or adenomatous change occurs. Under these circumstances massage of the prostate and measures calculated to relieve irritation of the vesical neck, which is very often responsible primarily for the hyperplasia of the prostate, are frequently curative.

I can only compliment the doctor upon the careful manner in which he has operated upon and studied his cases. His favorable results, in my opinion, in what are certainly serious operations upon old men, are due in great measure to the care with which he prepares the patient for operation. I believe that Dr. Johnson is correct in attributing the mental symptoms that appeared in three of his cases to renal disease. I do not like the expression, however, "due to the presence of albumin in the urine." The albumin has nothing to do with it. In such cases it is the insufficiency of the kidney, as far as the elimination is concerned, that is responsible for the brain symptoms, and these brain symptoms, by the way, are by no means infrequent with operations upon the bladder and prostate, or indeed any operation for the relief of chronic genito-urinary disease. I have in mind at the present moment the case of a gentleman who was insane for five months with suppression of urine, coming on four weeks subsequent to a successful perineal section for the relief of deep stricture. The gentleman eventually recovered completely.

The hernia operations performed in the class of patients coming under Dr. Johnson's care were certainly followed by very remarkable results, and are very encouraging with respect to the radical cure of hernia, especially when we consider the extreme age of the patients operated upon.

In conclusion, I will state that I am especially pleased with the cases reported by the author because of the fairness with which he has presented them. Such cases are reliable data from which to work in determining the advisability and value of castration and vasectomy for prostatic disease. There is no doubt but that these operations have a brilliant future before them. The principal objection I have to them is that they are

liable to interfere with the progress of radical operations upon the prostate, which, if performed early in life, will obviate long years of suffering, and will bring about a radical cure in cases that eventually would be compelled to submit either to radical operations upon the prostate at a time when the results would be extremely doubtful, or to castration. It must be remembered, that there is a large number of cases in which the patient suffers fearfully from prostatic disease; yet the sexual function remains practically unimpaired, and castration is not to be thought of for a moment. Such cases as these in my opinion will always constitute a demand for earlier and improved operations upon the prostate proper.

Dr. J. B. MURPHY of Chicago.—I desire to compliment Dr. Johnson on his excellent paper, and more particularly to congratulate him, first, on the line of investigation he has chosen; and, second, on the success he has attained in this unpromising and neglected field of surgery. The general practitioner, and, indeed, the general surgeon, are too prone to say to the unfortunate victims of prostatic disease, "Your trouble is one of the diseases of old age, and little, if anything, can be done for you." The poor old man is thus doomed to continue suffering such pain, such agony, such nocturnal disturbance, in short, such torture, that all things of the world, including life, are of negative value to him.

I feel that Dr. Johnson deserves the thanks of the ASSOCIATION for presenting this subject in such a terse and forcible manner. The emphasis placed on the careful examination should be reiterated, and particularly the careful sounding of the bladder for post-prostatic calculi, and the combined recto-digital and sound examination for intra-prostatic calculi. These are many times overlooked, and produce the most painful conditions of the prostate. To prevent the "catheter life" of the aged is worthy our best efforts, and Dr. Johnson has succeeded admirably. The cure of the herniæ was of great value to the patients, and the results as far as life is concerned encourge the daily practice of this operation. It pleases me that so much stress was placed on the rapidity of operation, as I am sure the element of time was a most important factor in securing success in the old and degenerated subjects I saw in his Infirmary. Another good point made by the essayist is the avoidance of incision or manipulation of the scrotal tissue. This tissue is very prone to infection if lacerated or exposed. The improvement of the vesical symptoms took place slowly in most of Dr. Johnson's cases. This corresponds with the course of my cases, as I have seen none of the instantaneous cures supposed to follow this operation. I am in favor of orchidectomy for prostatic disease. I had an opportunity of observing some of the author's work and to see many of his cases after operation. His results were very gratifying.

Dr. OCHSNER of Chicago.—Six months ago, at a meeting of the Mississippi Valley Medical Association, I drew the attention of the surgical section of that body to the fact that in old men hernia frequently became exceedingly troublesome, which had formerly usually been supported by means of trusses. This I considered to be due to the increase of intra-abdominal pressure, which was necessary to evacuate the bladder on account of the obstruction caused by the enlargement of the prostate gland. Having had an opportunity to observe many cases, and having had charge of five, in all of whom I relieved the condition by means of the operation which Dr. Johnson has described, and in all of which the result was extremely satisfactory—the patients being at once relieved of the difficulty resulting from the presence of the hernia and from the obstruction—has caused me to recommend this procedure. I am gratified to know that Dr. Johnson has made use of the extraordinary opportunity at his command in having care of such an enormous number of these cases, and I am equally gratified to learn of the excellent results. In children, we have a condition somewhat similar, and herniæ are very much more common in male than in female children, although I do not remember the proportion. This difference is largely due to the fact that the male children suffer from phimosis. In a very large number of children I have cured the condition by simply operating to relieve the phimosis, keeping them in bed with their hips elevated for a few weeks thereafter. This method cures, practically, all cases of male children suffering from hernia. The fact, however, that hernia occurs in Jewish children does not alter the question, as these boys will also be cured if treated in the way I mention. We have here a condition which is very similar, and I think it is worthy of consideration. I have performed the operation a number of times with equally good results.

Dr. ALEXANDER HUGH FERGUSON of Chicago.—The operation for the radical cure of hernia in addition to removal of the vas deferens and castration being an additional danger to these cases, points out the comparatively safe manner with which gonangeiectomy and orchidectomy may be performed. It also supports the theory of the ability of old people to withstand operations. It has been my good fortune to see most of the cases reported here today by Dr. Johnson, and although I have not made a critical examination of them, I learned from themselves that they were completely relieved of their former bladder trouble, or were vastly improved. I can also bear testimony to the careful aseptic surgical work done by Dr. Johnson at Dunning. Being a visiting surgeon to that institution myself, he has assisted me in a large number of operations on the aged poor.

It is not neccessary on this occasion to say anything about the different methods for radical cure of hernia. Ever since Dr. White of Philadelphia, in 1893, brought this treatment prominently before the profession, for hypertrophied and enlarged prostate, several hundred cases have been treated in this manner, and even the most conservative surgeon must admit that the treatment is beneficial in a large percentage of these cases. Dr. Johnson has been fortunate in the selection of his cases, and the results he has given us today are exceedingly happy. It must not be taken for granted, however, that all prostatiques will behave so well and so completely recover after either of these operations. You may call it empirical surgery, if you please, but the good results obtained in cases that have not yielded to hygienic, medical and mechanical treatment, justify us in performing these operations, and to obtain the best results the cases must be selected, as was done by Dr. Johnson.

Dr. F. C. VALENTINE of New York—I cannot agree with the author of the paper. In the largest service in Europe, castration has not been done for four years; this is true of Paris and Berlin. Vasectomy is also very rarely done, and then only when the patient demands operation. It has the appearance of being simply tentative. In the course of my studies in Paris and Berlin, it was a very easy matter to detect men who had been frequently catheterized, by an examination of the prostate, and I saw several in life who had regained as much use of the bladder as if they had been castrated. The results of castration have been discouraging to most men, and men who have had such invariably brilliant results have special skill, or are specially fortunately situated. I think it is time to be conservative, and in making up your mind to relieve a prostatic obstruction, do not always think it necessary to remove the testicles. Bearing in mind the unfavorable reports that we have of this operation, I would prefer to hesitate in performing it, and would certainly not do it until I had exhausted every other resource.

Dr. W. J. MAYO of Rochester, Minn.—I have had considerable experience with these cases in institutions with which I am connected, and it has been our rule to operate upon all patients that were otherwise well for the radical cure of hernia and in all of the cases in which there is prostatic hypertrophy we castrate at the same time. I have no doubt that many cases not operated upon die from strangulated hernia and obstruction. Our method relieves the hernia and the urinary difficulty at once. There is one variety that is somewhat difficult to handle and that is those cases complicated with unreducible hernia. Insane patients stand the operation well, except that the wound sites are very dirty and the skin in all of these patients is very oily. Before and after an operation for unreducible hernia, the patient should be kept in bed for some time on a modified diet.

Dr. JOHNSON in closing—I am aware of the condition of the affairs in France and Berlin, and of the opinions of the leading men in this country and Europe. I have nothing further to say, except to refer to the conclusions in my paper.

SELECTIONS.

Treatment of Seasickness.—An experience of five years on a transatlantic steamship line ought to teach something about the therapeusis of this affection, and such an experience Dr. Hugh Taylor of Southampton, endeavors to convey to the *Lancet*. He says: The nausea and subsequent vomiting of the first few hours are to a passenger prone to this malady almost inevitable, but seldom require interference, though the retching may become distressingly violent and, if accompanied by streaks of hemorrhage, especially alarming to the patient. I have found that the best way of relieving this condition is to apply a mustard leaf to the epigastrium, to give a hypodermic injection of morphia, some crushed ice to suck, and to insist

on the recumbent position being maintained by the patient. A whiff of amyl nitrite or chloroform is often useful; alcohol is best avoided, though a little iced champagne may be sipped in very small quantities. The frequently present constipation must be relieved by an enema or suppository, as purgatives by the mouth will usually be quickly rejected. Too much must not, however, be expected of this or any other line of treatment, but the urgency of the symptoms usually abates in from twelve to forty-eight hours, the patient gradually acquiring that stability of the nervous system nautically termed "getting his sea legs." The cases of prolonged nausea and seasickness in which the patient refuses or rejects all food are very trying both to the invalid and to the surgeon. If the cabin is a fairly large one and is not crowded I think these cases do better in their berths than on deck, though meddlesome friends will urge them to go on deck, to "walk about," and to "fight against" the malady. This unequal combat generally ends in the victory of Father Neptune, and the vanquished one staggers or is carried below—sick, blue with cold, and generally wretched. Hot bottles, blankets, a little stimulant, hot beef-tea, will quickly make the patient more comfortable. For general fluid nourishment I use beef juice, frequently retained, especially if the first two are mixed previously with a little powdered ice and administered in teaspoonful doses. If they are rejected they should be given again directly the fit of vomiting is over. As regards drugs I used with considerable success a prescription of chloroform, nux vomica, and compound tincture of lavender. An alkalin stomachic mixture with nux vomica is also useful after the acute symptoms have vanished; it assists a languid or capricious appetite. A dose of bromid of potassium and chloral or a hypodermic injection of morphia is beneficial at night, allaying restlessness and procuring sleep. In those cases which essay the ordinary saloon fare, anything in reason may be allowed them. One woman insisted that sauerkraut was the only thing which would relieve her, and it certainly on the trip in question seemed to stop the sickness, though it failed to do so on a subsequent one. Among adults there are some who, without any vomiting or nausea, suffer from persistent and severe headache and others who suffer from continuous intense giddiness; the former may derive benefit from phenacetin and caffein, bromid and chloral, or from nitroglycerin. The discomfort of the latter is only alleviated by the maintenance of the horizontal position. Children rarely suffer from seasickness, they are sick for a few hours and then are soon running about. A gentle laxative to combat the costiveness usually induced in them by a sea voyage and a little bromid and chloral at night will soon put them right, as a rule. My voyages have never lasted longer than ten days, so that in the case of longer trips one's experience might probably be greatly modified. I have never seen the numerous "quack" remedies do the slightest good, nor have I ever seen the at one time much vaunted "chlorobrom" retained where bromids of potassium and chloral were rejected by the stomach. In conclusion, I would say that a farewell dinner or other jollification the day before commencing a sea voyage is to a person subject to seasickness the very worst possible preparation for it. A blue pill followed by a Seidlitz powder is far better, though certainly not so festive.

On "Seeing the Case a Little Sooner."—In the *Brooklyn Medical Journal*, July, Dr. W. L. Chapman reports a case of extensive necrosis of the bones of the hand following felon. The patient was a female, aged 30 years, and married. While dressing one of her children she pricked the end of her index-finger with a safety-pin. Severe pain set in within twenty-four hours, when she was awakened from sleep by a throbbing pain in the injured finger. Her family physician could not be found, so that a comparatively unknown physician of their neighborhood was called in. This physician properly diagnosed the case as a felon, made an incision of the last phalanx down to the periosteum and dressed the wound antiseptically. The dressings were repeated daily for three or four days, at the end of which time the entire hand was swollen and painful. The family discharged the first physician and sent for the writer of this paper, who found a general cellulitis of the hand. Incision of both palmar and dorsal aspects of the hand was performed and iodoform gauze inserted to secure drainage. The constitutional symptoms shortly abated, but the wounds continued to discharge until three weeks later, when the middle phalanx fractured spontaneously. Two days later the physician amputated the finger, but finding the metacarpal bone involved, removed that also. The metacarpal bone was not largely affected, but the patient had become greatly debilitated and he was afraid to leave any affected bone behind. The family was very angry with the physician who first treated the case, and the later practitioners had some difficulty in dissuading them from bringing suit against him for damages. They were ignorant people, and attributed the loss of the finger to the unskillful treatment of the first physician. They could not have obtained any damages, as the physician had treated the case properly, but it might have put him in a most unpleasant predicament and done him unmerited injury. Dr. Chapman closes his report with the following observations as to the medico-ethic situation in this and similar cases: "There is no doubt that the family might readily have found a plenty of 'ambulance chasers,' or unscrupulous lawyers to take the case in the hope of scaring him into a settlement, and a careless remark from either of us would have caused them to undertake it. Many damage suits for malpractice are caused by the statements of the physician who saw the case at its termination. In order to relieve himself of any responsibility in the case, he throws the blame on the one who first attended the case. There is one statement occasionally made by physicians which is a disgrace to the medical profession, lowering to the one who makes it, and injurious to his colleagues; its use is altogether too common. It is, 'If I had only seen the case a little sooner.' The reason I speak of the medico-legal part of it is that there are two cases pending now for similar affections. One was lanced, but did not terminate so favorably; the patient died. The other one is just like it. I have not the privilege of mentioning these cases directly, as I heard of them through friends. The suits are about to be brought."

PRACTICAL NOTES.

The Value of Digitalis in Pneumonia.—Maragliano states that he has established beyond a doubt the specific action of digitalis on the pneumonia coccus. A very small amount will kill the cocci in a culture and also neutralize the toxicity of pneumonia toxin in injections. Owing to this effect of the digitalis in neutralizing both toxins, pneumonia patients are able to stand much larger doses of digitalis than healthy persons.—*Gaz. d. Osp. e d. Clin.*, No. 31.

The Choice of an Alkalin in an Acid Dyspepsia is not an indifferent matter, as Dubard has established that the acidity and pyrosis connected with the presence of organic acids in the stomach are rendered more intense by sodium bicarbonate, while they are favorably affected by the magneso calcareous powders. On the other hand, in true "hyperchlorhydrie," especially when there is pylorism, the preparations of lime and magnesia aggravate these conditions, while sodium bicarbonate is beneficial.—*Semaine Méd.*, July 20.

Painful Dysphagia Evidence of Syphilis.—J. Garel calls attention to the fact that every person who complains that it has hurt him to swallow for the last few weeks, three at least, should be considered a syphilitic and treated accordingly. Syphilis can be diagnosed at once from this one symptom of persistent dysphagia *at any stage*. It is frequently the first or only symptom recognized by the patient. The pain vanishes with forty-eight hours' treatment with potassium iodid, unless it is due to that extremely rare cause, incipient cancer or tuberculosis of the throat, which can thus be differentiated.—*Semaine Méd.*, July 6.

Holocain.—Randolph (*Johns Hopkins Hospital Bulletin* for July) records fifty-four cases in the eye clinic with the use of holocain. He concludes that as an anesthetic it is sufficiently effective, and says: "In those cases where a test was made of the rapidity of its action, as for instance, in foreign bodies in the cornea, the quickness with which anesthesia was produced was striking. Whether the anesthesia produced after two minutes is sufficiently profound to guarantee a painless iridectomy or a satisfactory cataract extraction I did not determine, but in those cases where operations of this character were performed, and where the holocain was instilled just as we do cocain, no difference was observed in the anesthesia from that produced by the latter."

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SATURDAY, AUGUST 27, 1898.

THE NATURE OF THE ANTAGONISM BETWEEN TOXINS AND ANTITOXINS.

The antagonism of toxins and antitoxins is a subject in regard to which our actual knowledge has been limited thus far, and any contribution is therefore welcome. We know really very little about the true nature of these substances; our therapeutic acquaintance with their qualities has been gained by experiments suggested by empirical observation, not thought out and elaborated à priori from any actual knowledge of the true nature of the materials dealt with. The how and why there exists a therapeutic antagonism have been up to the present, mainly matters of conjecture, not of knowledge, and whether it is chemic or bio-chemic, or more strictly physiologic, has been disputed with more or less weight of argument on either side.

A late issue (August 4) of the English scientific publication "Nature" contains an abstract of a communication to the Royal Society, June 6, by Messrs. MARTIN and CHERRY that seems to add at least some facts on this matter of the antagonism of toxins and antitoxins. BEHRING, EHRLICH, KANTHACK and BRODIE had advocated the view that this antagonism was a chemic one, somewhat analogous to the neutralization of an alkali by an acid, while BUCHNER, CALMETTE, METCHNIKOFF and others have maintained that it is indirect, and operates through the cells of the organism. If, therefore, it can be proved that antitoxin neutralizes toxin outside of the body, *in vitro* and not necessarily *in corpore*, it would go far to establish the theory that the action was a chemic and not a physiologic one. CALMETTE had shown that in a mixture of cobra poison with a neutralizing quantity of its antitoxin and heated to a temperature of 68 degrees C. for ten minutes, the toxin retained its powers, while the antitoxin was destroyed. The authors considered this experiment inconclusive, as not taking into account the element of time, which should be considered as well as that of temperature in estimating chemic action. They therefore made a series of experiments on guinea-pigs, with a mixture of one cubic centimeter of antitoxin to twice, three times, and four times the usual fatal dose of snake venom. In the control experiments with the venom only, all of the animals died within a few hours. The mixture was allowed to stand at the usual laboratory temperature of 20 degrees to 23 degrees C. for the period respectively of two, five, ten, fifteen and thirty minutes, then pipetted off and heated for ten minutes to a temperature of 68 degrees C. and then injected. The animals subjected to the mixture of the stronger doses of venom that had stood for ten minutes or less mostly died or were very seriously affected, all of those that received the fifteen-minute mixture survived, though two were sick, while the thirty-minute mixtures produced no symptoms whatever, as was also the case with a similar series of unheated mixtures in the same proportion that had been allowed to stand for eight minutes before injection. Similar results were obtained with diphtheria toxin and antitoxin.

These experiments seem to show as far as anything can that the neutralization of toxins may occur *in vitro* and that the vital processes in the organism or the body cells are not essential to the process, and unless we assume what appears hardly justifiable, considering the usual mode of its preparation, that the antitoxin itself possesses some vital properties that are active in it, it must be some sort of chemic reaction that takes place. Messrs. MARTIN and CHERRY, however, have supplemented the above experiments with another that appears equally conclusive, but in a different way. The molecular sizes of diphtheria toxin and antitoxin appear to be quite different; the toxin passes freely through a film of gelatin in a Chamberland filter under pressure, while the antitoxin is retained. They took a solution of diphtheria toxin, equal to eight fatal doses per cubic centimeter, and mixed it with a sufficient amount of antitoxin to neutralize it, allowed the mixture to stand for two hours and then passed it through the gelatin filter. Varying quantities of this filtrate up to four cubic centimeters (= 32 fatal doses) were then injected into guinea pigs without bad results, not even a local edema was produced, and the animals throve under the injections. The unavoidable conclusion from this experiment is that the toxin was neutralized before filtration, as, were it otherwise, there was nothing to prevent it passing through a filter, as it had been repeatedly observed to do in fresher mixtures.

While the investigations of MARTIN and CHERRY throw a very decided light on the nature of the

antagonism of toxins and antitoxins, and leave us to infer with almost a certainty that it is a chemic rather than a vital one, they still leave us almost as much as ever in the dark as regards the real character and nature of the two substances. This assumption that the toxin is an albumose is perhaps a reasonable one, more so, indeed, than the suggestion based only on the apparent size of its molecules, that antitoxin is a globulin. Whatever they may be, however, it is an important gain to know something more of the nature of their inter-reactions.

Although the reaction seems to be essentially a chemic one, it is also possible that it is especially favored by the vital processes within the body. When we consider the start that the toxins practically have in disease, it would appear probable that this must be the case to some extent, as otherwise the antitoxins could hardly be as effective as we find them to be, especially in diphtheria. In any case there is probably some natural resistance of the system to be accounted for in the practical problems of the action of these agents on the organism.

HAY FEVER.

Medical literature can give us no definite data as to when this peculiar affection was first regarded as a distinct and separate disease. Unmistakable cases were reported in the sixteenth century, and since that time the disease has been becoming steadily more and more prevalent. The fact that there is a hay fever association in this country, which has records of over two hundred thousand cases, will show how extremely common the affection is in the United States. Indeed, this country and England are its principal seats, the inhabitants of Germany, France and other countries of continental Europe affording comparatively few cases. It might be stated here as a rather curious fact that hay fever is but infrequently encountered among immigrant Germans (JACOBI) and French, even in the regions where native English and Americans are particularly prone to attacks.

Since its earliest discovery the cause or causes of hay fever have been enveloped in doubt. Every conceivable reason, from the blessed sunlight of heaven to peculiar odors of animals or flowers, has been eagerly accepted and as quickly rejected. It was only when the gloom of mysticism and empiricism began to give way to the light of earnest thought and scientific study that some order came out of chaos. It was early recognized that the disease occurred in several successive generations, so that heredity was looked upon as a factor of some importance. Its annual appearance in many sufferers not only on the same day, but at a certain fixed hour, has been noted by many observers; indeed, the victims themselves often predicted accurately the hour of their first sneeze. Cases are numerous of the influence of the smelling of a rose in the production of the disease, and all are probably familiar with the case of MACKENZIE in which an attack was precipitated by his giving his patient an artificial rose to smell. Mere intelligent observation of a picture representing some farming scene has been a sufficient cause to bring on an attack. These and many other instances of a similar nature have proven beyond the question of a doubt the neurotic element of the disease. Among other predisposing causes might be mentioned the male sex and the white race, attacks being of exceeding rarity among negroes. Age does not exert much influence, all ages being susceptible; usually, however, the victim has been subject to several annual attacks before the middle period of life.

The symptoms on the part of the respiratory tract led to early explorations of the nasal cavity for possible cause. The observers were not disappointed; almost invariably the subjects of hay fever have had some pathologic condition existing in the nose; ulcer, polyp, hypertrophy or congestion of the turbinates, deviation of the septum, remains of adenoids in the nasopharynx, chronic nasopharyngitis, have all been noted by various writers. It might well be stated as an objection that the nose-and-throat man who can not find at least one of the above conditions in every case that presents itself should give up the specialty; so that possibly a pathologic nose does not play the important part it was formerly thought to.

Among other predisposing causes the one that has gained the most support of recent years was that advanced by BISHOP at the annual meeting of the AMERICAN MEDICAL ASSOCIATION in 1893. In his own words, "an excess of uric acid in the blood causes hay fever." He showed that many patients afflicted with hay fever have an excess of uric acid in the blood during the morning; further, that these were the ones that were attacked during the early morning hours. He thought the paroxysm of hay fever analogous to an attack of epilepsy superinduced by the irritation of some pathologic meningeal process, tumor, adhesion, or hypertrophied bone, and that an attack, itself caused by a setting free of uric acid, on account of the pathologic condition of the nose was determined to that area. BISHOP claims that his theory does not at all interfere with the neurotic theory, but on the other hand, seems to clear up some points previously obscure, as for instance the onset in the morning. He thought that with the correction of the possible pathologic nasal conditions present, the attacks were switched off, as it were, from involving the nose, but that the excess of uric acid in the blood would be certain to cause symptoms of uricacidemia elsewhere in the body. Naturally, then, he directed attention both to the cure of any nasal disease present and to the prevention of an abnormal quantity of uric acid in the system.

The exciting cause of the disease is undoubtedly the pollen of plants, as proved over thirty years by

the beautiful and laborious work of BLACKLEY. He demonstrated, to the satisfaction of the entire profession, the increase of pollen in the atmosphere at the time of the greatest prevalence of hay fever, and its gradual disappearance as the season verged toward fall.

TREATMENT OF ENTERIC FEVER BY SYSTEMATIC COLD BATHING.

Dr. WILSON of Philadelphia, who, as is well known, has, for a number of years, consistently practiced the treatment of typhoid fever by cold bathing in the German Hospital in Philadelphia, now reports[1] the statistics of 741 cases, of which 55 died, the mortality being 7.42 per cent. In these figures are included all the cases of typhoid fever which entered the hospital from Feb. 1, 1890, until Jan. 1, 1898, excepting one patient who entered one afternoon and died the following morning, the anatomic diagnosis being typhoid fever. This patient was not bathed.

An analysis of the cases of enteric fever for the years 1896 and 1897 is also presented. For the purpose of comparison there is appended the statistics of the three principal hospitals in Philadelphia for the year 1896. The average mortality of 403 cases in these hospitals was 9.92 per cent. In these institutions some cases are treated by systematic cold bathing according to BRAND'S method, but this treatment is not general, and Dr. WILSON can not state what proportion of the cases are bathed and what treated upon other lines. During the same year 64 cases were treated in the German Hospital, with seven deaths, a mortality of 10.9 per cent. During 1896 2490 cases of typhoid fever were reported to the Board of Health at Philadelphia. The number of deaths was 402, mortality 15.14 per cent. In 1897 the mortality rate was 13.39 per cent.

In this article Dr. WILSON also describes certain modifications in the method as originally formulated by BRAND. These modifications have been gradually adopted as the result of experience.

1. At the beginning of the attack purgatives, especially calomel, sometimes in fractional doses, are given. Purgatives are not administered to those who enter after the tenth day of the disease.

2. Cold is applied to the abdomen in all cases of marked abdominal tenderness, pain and hemorrhage.

3. The treatment by systematic cold bathing is established as a routine method and is employed in all cases; the only contraindications are, speaking generally, the signs of peritonitis, hemorrhage, perforation. Appropriate medicines are administered in response to special indications. The proportion of cases requiring any medication whatever, has been found to be very small, not exceeding 10 per cent. As convalescence begins, dilute hydrochloric acid may be given for a short time, and later, if anemia is present, some form of iron.

4. The rule had been adopted, and is still in force, to repeat the bath whenever the axillary temperature reaches 101.4 degrees F. The baths are repeated whenever necessary at intervals of three hours. Formerly, however, baths were stopped as soon as the temperature ceased to go above this point. A very interesting observation led to a modification of this rule, viz.: quite frequently patients with a temperature lower than 101.4 degrees would ask for baths because of the greater comfort obtained. Hence there has been instituted the practice of giving one or two plunges a day during defervescence, and this has seemed to hasten convalescence.

5. The fever wards in the German Hospital are small, each containing six beds. The bath has been arranged at the end of the small ward; the graver cases are placed in the beds nearest the bath and carried by the attendants from the bed to the tub and back, while the milder cases and the improving patients walk to the bath with the assistance of the nurses. In all cases the improving and milder cases rise from their beds every three hours, are assisted to the tubs by the attendants and return the same way. In no instance has Dr. WILSON had any occasion to believe that this modification of BRAND'S original formula, namely, that a movable bath tub be placed at the side of the bed, had any unfavorable effects. On the contrary, favorable influences upon the course of the disease have been noticed. In addition to these empiric reasons there are good theoretic reasons for certain changes in the traditional methods of treating cases of long acute febrile diseases. Among the complications of typhoid fever, bronchitis, bronchopneumonia and hypostatic congestion have always been prominent, no matter what the treatment. These phenomena are, to a certain extent at any rate, due to the progressive weakening of the heart and mechanical derangement of the circulation. Dr. WILSON also believes that the development of somnolence, intestinal paresis, etc., is favored by the log-like, passive recumbency of the typhoid patient. Muscular atrophy from disuse and deranged lymphatic circulation are also mentioned in this connection. The experience in the German Hospital seems to point to the fact that enforced continuous repose adds to the original disease secondary nutritional disturbances due to functional disuse.

6. The measure of success in the treatment by cold bathing is determined by the period in which it is begun. BRAND'S claim that the mortality is practically nothing when the cases are treated by his method from the beginning can not be confirmed in ordinary hospitals, because cases do not come to the hospital in the beginning of the attack. Many observations, however, show that the earlier the treatment is begun the greater the reduction in the death-rate. Ordinarily the hospitals do not receive any cases of typhoid fever until toward the end of the first week, the great

[1] The Philadelphia Medical Journal, July 9, 1898.

majority later than this, and quite a number as late as the middle of the third week. At the same time there are many mild cases ("mild typhoid") admitted at any time during the progress of the disease, with so low temperature that but few baths are given. These cases would probably recover without any treatment at all.

Plainly, treatment by cold baths, begun late in the course of the disease, must largely fail as a general plan, and it is also plain that the bath treatment can not be claimed to shorten the course of mild cases of typhoid. Dr. WILSON believes, however, that these two groups of cases offset each other, and that the conclusions based upon statistics are justified.

VENEREAL DISEASE IN FICTION.

From SWIFT's "Tale of a Tub" it is evident that it was in the early eighteenth century *en regle* for young men "seeing life," to contract gonorrhea as a necessary part of their sociologic experience. Dr. TOBIAS SMOLLETT, in the latter part of the same century, evidently also deemed it a necessary part of the social education of the young men. Roderick Random, while an apothecary's clerk, contracts gonorrhea as a necessary part of an amour. He cures himself and his female companion of this disease. She, a woman of good standing in society originally, has sunk into prostitution through seduction. According to her, in the eighteenth century, "The most fashionable woman of the town is as liable to contagion as one in a much humbler sphere. She infects her admirers; her situation is public; she is avoided, neglected, unable to support her usual appearance, which, however, she strives to maintain as long as possible; her credit fails; she is obliged to retrench and become a night-walker. Her malady gains ground; she tampers with her constitution and ruins it. She grows nauseous to everybody, finds herself reduced to a starving condition, is tempted to pick pockets, is detected, committed to Newgate, where she remains in a miserable condition till she is discharged because the plaintiff will not appear to prosecute her. Nobody will afford her lodging, the symptoms of her distemper have grown outrageous; she sues to be admitted into an hospital, where she is cured at the expense of her nose." Random's master, the apothecary, has a specific for venereal disease, which brought him in a great deal of money, that had no effect on tertiary accidents. This is not surprising, considering the proclivities of this apothecary for substitution. Venereal disease, impotence and seduction to sexual perversions are utilized by Dr. SMOLLET, but only, however, as a realistic side issue in the retribution for sexual errors. This phase is only with SMOLLETT a part of the novel, for a purpose. In his day, Lock hospitals were frequently started by practitioners, ostensibly for charitable purposes, but really for the same object that dispensaries are started today. It is a singular fact, however, that the prejudices in cities against these was in the eighteenth century, in England, much less than it is today.

In the late nineteenth century the employment of venereal disease to subserve the moral objects of a novel for a purpose has been revived by SARAH GRAND. Her first popular production, "The Heavenly Twins," dealt with the marital effects of syphilis acquired by the husband in youth. She assumes, however, that syphilis insontium is an impossibility and that the male is always to blame. The object of the introduction of the venereal element into "The Heavenly Twins," is to show that men of fast lives ran serious risks of infection with constitutional venereal disease. It further teaches the sound sociologic doctrine that girls should not allow themselves to be married to such men, even if they had reformed mentally, unless their physical cure was equally well established. A marriage occurs in "The Heavenly Twins," based on "love" between playmates. The child which results from this marriage is born "old," with a "cold in its head," and resembles "a speckled toad." An illegitimate child of the same father has identical characteristics. The wife becomes progressively pallid, weaker and irritable from the day of her marriage till after the birth of the child. Thereafter she becomes insane, with a psychosis of a type due to exhaustion, rapidly passing into dementia, and hence probably of luetic origin. Although the topic is dealt with by SARAH GRAND in a less revolting manner and with greater scientific probability than in CONAN DOYLE's "Round the Red Lamp," where tertiary effects are carried in full luxuriance to the third generation, still the problem involved in marriages with victims of syphilis is stated with equal force in both. It is to be regretted, however, that neither of the two has the notion of introducing syphilis caught from the practice of kissing children, or from the employment of healthy women to wet-nurse a syphilitic child. It would appear more desirable, if venereal diseases must be utilized in fiction for sanitary and sociologic purposes, that the fiction should deal with those innocently acquired, since these are the most dangerous. Obstetric syphilis, contracted by the physician in the general practice of his profession, has often led to the moral downfalls of the onset of paretic dementia, and hence could not but furnish a valuable moral from a sanitary standpoin to the writers of the "novel with a purpose."

In her second volume, "The Beth Book," SARAH GRAND strikes at a revived prejudice against the adoption of the treatment of venereal disease as a specialty by physicians. As already stated, this prejudice was not strong in the English cities during the eighteenth century in proportion to its strength today. Just ere the outbreak of the fifteenth century epidemic of syphilis this prejudice was particularly rabid. On the modern principle of the effect of a new culture-medium on the microbe, the virulence of the epidemic

as contrasted with the centuries-old, practically edemic lues (BURET, "History of Syphilis") is readily explicable. This virulence, however, gave acute characters to the old disease. Society physicians, fearing ostracism, refused to treat a disease which they claimed was unknown to GALEN and abandoned the sufferer to the tender mercies of quacks and empirics. Among the ranks of the medical profession have always been heroes who refused to obey society's behest and neglect suffering even among the vicious and criminal. Prominent among these was that great reformer under the guise of satire, Dr. RABELAIS, whose generous disposition drew him toward this neglected class of patients. In 1538 he made great efforts to reform the abuse of mercury in the treatment of the syphilitic patients at Paris. RABELAIS says that he "has often seen syphilitics when greased with mercural ointment, their faces on edge like a knife and their teeth clacking like the key-board of a broken-down organ." In the treatment of syphilis RABELAIS used mild mercurialization, guaiac and the hot air and other baths which had been previously recommended by TORELLA.

SARAH GRAND makes a plea similar to that of RABELAIS for the treatment of venereal diseases in special hospitals. The "Beth Book" deals with the social ostracism of a physician to a Lock Hospital because of the prejudice of the society people of the English countries against the practitioner of an admitted specialty of venereal diseases. Among the British squirearchy (as a rule the narrowest snobocrats of the English-speaking peoples) this prejudice flourishes in full luxuriance, stimulated by a Malthusian cant which the humane MALTHUS would have been the first to repudiate. It is to be especially regretted that the absence of special hospitals for venereal disease from most American cities, demonstrates that this prejudice exists to an enormous extent among the speculative commercial classes who practically rule the business end of public and private charity. The existence of innocently aquired venereal disease is a sufficiently potent argument against Malthusian cant of the type described. It is to be hoped that "The Beth Book" may accomplish some reform in the English-speaking countries in this particular, albeit the book, like "The Heavenly Twins," appeals in its style to the hysteric rather than to the well-baianced social reformer.

CHOLERA BELTS.

It is understood that the Army Medical Board consisting of Colonel DALLAS BACHE, Lieutenant-Colonel CHARLES SMART and Major WALTER REED, convened by the Secretary of War to consider the question as to whether or not the Government should issue the so-called "cholera bands" for the use of United States troops in the field, has made its report to the Surgeon-General of the Army. It appears that the board investigated the literature of the subject, including the latest and best works on military and general hygiene, and the writings of the authorities on tropical diseases to determine the precise grounds on which the popular impression of the value of the abdominal band was based, for the board recognized the existence of a general impression among the members of the medical profession as well as among the laity, that the protection afforded to the abdomen by the wearing of a flannel band of sufficient width is beneficial in warding off attacks of diarrhea and dysentery. It did not, however, find any conclusive evidence of the value of the band. The authorities on the diseases of tropical climates recommend its use as a sanitary precaution; but these authorities are almost without exception, English physicians, and their remarks have a special reference to the insufficient protection afforded by the regulation clothing of the British soldier. The highest English authority on both general and military hygiene says: "The soldier wears no drawers, but in reality it is just as important to cover the legs, thighs and hips with flannel as the upper part of the body. Drawers folding well over the abdomen form, with the long shirt, a double fold over that important part, and the necessity of the flannel belt is avoided." The English soldier, in temperate as well as tropical climates, is supplied with two abdominal flannel belts, for the reason that, during the night hours and while sleeping, the skirt of the shirt, not being held in place by the belt of the drawers, is liable to be drawn up, with a consequent risk of chill to the abdominal surface. The board invites attention to the fact that it has not been found necessary to issue abdominal bands to U. S. troops serving in Arizona and New Mexico, a climate in which there is marked variation between the diurnal and nocturnal temperature, and rapid evaporation from the surface of the body, owing to the extreme dryness of the atmosphere. The American soldier is provided with suitable woolen underclothing including shirt and drawers; the whole surface of his body is protected against sudden chilling, and the region of the abdomen guarded by two thicknesses of material. Under these conditions the board considers that there is no necessity for the issue of the so-called "cholera bands" for the use of the United States troops in the field.

CORRESPONDENCE.

The Medical Department of the Army.

FORT HAMILTON, N. Y., Aug. 15, 1898.

To the Editor:—After the published statements of General Sternberg, Lieut.-Col. Senn, Capt. Munson, U. S. A., and others, perhaps nothing further is needed to offset the prejudiced and sensational articles which have appeared in the daily press from correspondents and from certain hysteric members of the Red Cross, seeking to aggrandize their own services by belittling the work and results of the Medical Department of the Army. However, I will venture my mite. Sent to service

with troops in the field at the time war was declared, attached to regiments, and later a member of the staff of the Second Divisional Field Hospital, Fifth Army Corps, there has been abundant opportunity at Chickamauga Park, at Tampa, on the hospital ship *Olivette*, and in Cuba, from which I returned on July 19, to see the workings of the Department under many and varied exigencies incident to the adaptation of its organization from a peace to a war basis.

It is to be noted that until after the landing in Cuba there was a remarkable freedom from adverse criticism by the lay or medical press or individuals. On the contrary, remarks complimentary to a high degree were frequently heard from line officers, to the effect that if war had developed defects in other staff departments, it had shown the soundness and efficiency of this one. The medical officers of the regular army, who, under the scientific guidance of General Sternberg, had for years rigorously and at frequent intervals inspected the sanitary conditions of posts and camps, the food and clothing, analyzed the water-supply, and superintended the first-aid training of officers and enlisted men, continued their work at the Chickamauga and Tampa camps, and the records show how few men were left behind or accompanied the army of invasion with physical disabilities. While a great quantity of medical supplies were carried along on the *Olivette* and on the troop-ships, our ambulances and transport wagons, of which a sufficient number had been provided by Colonel Pope, U. S. A., the chief surgeon, were denied ship room.

During the long trip from Tampa to Baiquiri, the *Olivette*, commanded by Major A. H. Appel, with its eighty first cabin staterooms, accompanied the fleet, and whenever the sea permitted, received all sick from the crowded transports. Plenty of fresh air, ice, and suitable food brought about a speedy recovery in many men, who were consequently able to rejoin their companies on reaching land. At Baiquiri, as rapidly as men could be landed, they were pushed to the front with only travel rations, a change of underclothes and ammunition, leaving behind, in most cases, the medical stores of the regimental surgeons, either on the transports or along the shore where the small boats had dumped them. Dependent on other departments, its own means of transportation being perforce left far behind, the difficulties confronting the Medical Department of carrying tentage, cots and supplies along with the rapidly advancing army, and keeping everything in shape for the quick relief of the hundreds of wounded and sick men liable to be thrown on their hands at any hour, were truly immense, and reflection has not lessened my admiration for the executive work of men like Major Legard, Major Wood add Major Rafferty, who were burdened not only with their strictly professional duties, but with details of quartermaster and commissary work. However, a field hospital was on hand at the battle of Las Guasama, and the *Olivette*, steaming to Siboney, received on board the eighty wounded, of whom not one, to the best of my knowledge, has since died from his injury.

Personally present during part of the battle of San Juan, I was amazed and gratified not only at the intrepidity and dexterity of the regimental surgeons and their hospital corps men while under fire, in dressing the wounded, but in witnessing how quickly the wounds of hundreds who were placed hors de combat in a few hours were quickly protected by their comrades with sterilized first aid dressings. The worst cases were treated at Major Wood's hospital, which was as near the front as the firing allowed. The others returned by ambulances or wagons to Siboney, where the second and third divisional field hospitals joined their forces. Here tentage for nearly a thousand patients had been erected. Of the necessary antiseptics, dressings and instruments there was a sufficient supply, though much still remained aboard several transports impossible of access, and the hospital ship *Relief*, under Major Torney, U. S. A., arriving soon after the San Juan battle, brought a great quantity more. Only a few men in all reached the Siboney hospital without having previously received a first aid dressing, and careful disinfection of wounds, dressings or operations were proceeded with as rapidly as was consistent with the patients' safety. I can speak with great pleasure of the uniform carefulness and attention to surgical cleanliness on the part of my colleagues, even when ready to drop from exhaustion incident to days and nights of almost continuous work. But one amputation from bullet wound and the very few cases of infected wounds speak volumes for their care and skill.

Upon the scene now appeared for the first time representatives of Clara Barton's Red Cross, who, with a doctor or two and several trained nurses, lent an assistance duly appreciated. It must not be for a moment forgotten, however, that what they did—and no one appreciates it more than those they directly aided—was but a drop in the bucket to what had been done and was being done by the Army organization. Suffering there was, of course. As Dr. Senn says, "war always has its hardships; it can not be prosecuted in parlor cars or clubhouses;" and in spite of all defects and omissions incident to our first hurriedly prepared invasion of a foreign land, history, I think, will show that after no previous battle were the wounded tended so quickly, and with such good results and so little suffering. Respectfully, LOUIS P. SMITH,

First Lieutenant and Asst.-Surgeon U. S. A.

A Chair of Ethics in Medical Colleges.

TOLEDO, OHIO, Aug. 15, 1898.

To the Editor:—It goes with the saying that medical colleges are very largely responsible for conditions existing in the medical profession. Conditions, as used above, include many things, and the word "responsible," in this same sentence, points prideward as well as in the opposite direction. One condition, as the word is used, is the general intelligence of the medical profession; another, the standard of medical knowledge which maintains, while professional honor, honesty, morality, etc., are others.

Medical colleges are alike responsible for the highest grade in learning, uprightness and respectability, for example, as they are for the lowest grades in the same spheres. Naturally one looks for a college-bent principle to lean in the same direction throughout life, and the expectation is usually realized. There is among some members of the profession a positive antagonism to the "Code of Ethics." That antagonism had its origin some place, in some influence which was generated either by teaching or from observation, and medical colleges are in a great measure responsible for the existence of that unbelief. Like other evils, it would cost many times more to uproot it than it would have cost to have seen to the sowing of clean seed in the start.

Recently a physician said, during the session of a medical society, that he had been practicing medicine for thirty years, and that he had never so much as read the "Code of Ethics." There was an air of serenity about him which betokened a feeling of self satisfaction within, and as he stood in contemplation of the example of a self made ethical physician, which he presented to the society, the odds were, from his point of view so preponderantly against anything which the followers of the Code could adduce, that the expression of his face showed commiseration for that physician who had been under the dwarfing influences of the Code. Not much can be done with such a man. Probably the easiest way and best way is to leave him to the blissful enjoyment of his own company.

There are other kinds of anti-code men, and anti code men for other reasons. These men skirmish in their home societies during the year, and then have their annual round-up at the meetings of the A. M. A. There are all kinds of men at these

meetings, and one class get so tired of the yearly résumé of the various astigmatic visions which the Code reformers believe they have had during the year, that they say, "for the sake of harmony, for the sake of peace, for the sake of what we came here for, give them what they think they want." This class of men are loyal to the profession, to the Code, and to the A.M.A., but they are they who, because they have not much depth of earth (sand), when the heat comes, wither away, and the no-codists have the aid of their votes.

Another class, while not more loyal to the best interests of the profession, take life easier, that is to say, stand grief better, and upon the final vote, good-naturedly vote, "No," and then, as they should, dismiss the matter from their minds until some one of the reformers proceeds to remove the dressings from the imaginary sore, at the next session.

This class of physicians appreciate the fact that the no-codists are equally as scientific physicians as are those who uphold the Code. They know too, that they themselves have hobbies, and that if fifty or a hundred of them could but unite upon one particular hobby, they could make life as much of a burden for the members of the ASSOCIATION as the no-codists are doing; and so they charitably accept the situation as being one of the afflictions to which humanity is incident, giving thanks that their own erratic ideas are of such a nature as to make a combination with any other hobby impossible. There always have been no codists at the sessions of the A. M. A. and the no-codists emphatically assert that they are always going to be there, so it would seem that a meeting in which the Code question would have no place upon the program is past praying for; and really, to have the Code regularly scheduled as the subject for annual effervescence and defervesence is not the worst thing for the ASSOCIATION which can be thought of. Beside, it follows by no means, that if the Code question were strictly debarred from discussion there would be no time spent over ASSOCIATION rules and laws of government, because it is apparently the first thought of some men as soon as they become members of an organization, to look in the constitution and by-laws for something to amend or strike out, and it is better and safer for the ASSOCIATION, as now, to have a definite, well-understood subject the object of attack, than it would be to leave the undictated imagination to find a wrong whose victims would be crying to heaven for redress.

Some probably are kept away from the meetings by what they feel to be an unbrotherly contention, or a waste of valuable time, but quite as many others, if it were known that the code question would not come before the session in any form, would stay at home, so that the effect upon the number of members in attendance is a stand-off.

The object in having a Chair of Ethics established in medical colleges is not that such a chair would in any way seek to interfere with the no-codists' cherished right of the stated parade of their opinion, or in fact with anything else that they feel belongs to them, but the object is to inculcate the truths of the Code on the minds of students of medicine, precisely as the chair of anatomy builds up in the minds of students a knowledge of anatomy.

The anatomy of osteopaths, christian scientists, and what-nots, is a very different thing from anatomy as taught in medical colleges, and just so the no-codists exhibit their skeleton of the code, which everybody except themselves knows is not the frame-work of the Code of Medical Ethics at all. The chair of anatomy does not bother with osteopaths, etc., neither would the chair of ethics need to trouble itself with the no-codists. If a medical student were, once or twice a week, for four years, to listen to a lecture upon the Code, he would be at his graduation a better physician, a better citizen, a better man, than he would be without the lectures. There is abundant material about every medical college to illustrate the teachings of the Code, and with a copy of the Code in the hand of each student, the professors would become exemplars of the Code, not that they are not such now, but, in a wider and deeper sense it would be more manifestly and specifically the appropriate thing that "the teachers of such things ought themselves so to walk."

For the demonstration of the operations of the Code, the clinic itself would furnish many object lessons. To most men the Code is a helpful looking glass. By it many removable defects are made visible, and these defects removed in student life would save much mortification that would otherwise be inevitable in later years. It costs something in temporary comfort, and in money also, to remove a blemish, but society as well as the afflicted one, in the end, is better off for the sacrifice.

The Code, like all other beneficent provisions, squarely antagonizes selfishness. There is a robustly modest denial of the existence of selfishness in any degree, in some sections of the East, but most men in their quiet moments can recall in some of their acts the workings of that subtle influence, and to such men the stimulation to greater carefulness, which the Code constantly begets, is an acknowledged help. Selfishness is in a way, cunning. Our own selfishness often deceives our very selves. More often it is, indeed, that it blinds and deceives us, than that others are fooled by it, hence it is that the easiest place to detect selfishness is in others. In a chair of ethics is a hitherto unused power which is potent for good to the medical profession.

What the condition of the profession would be to-day, had such a chair always been in colleges, is a matter of guesswork; but because a chair of ethics never has existed is no reason why one should not be established.

The desirableness of a better knowledge of what the Code teaches, so that there may be a better measuring up to its standards, must be the excuse for having taken so much of your space in trying to outline the theme.

J. F. TRACY, M.D.

Congenital Absence of the Uterus and Anus, the Rectum Ending in the Vagina.

PAWNEE CITY, NEB., Aug. 10, 1898.

To the Editor:—After describing the more usual forms of malformations, Dr. C. A. Kelsey,[1] says: "In addition to these more common malformations there are various others. The anus may open by an abnormal anus at any point in the perineal or sacral regions, or it may end in the bladder, urethra or vagina." Bearing on this subject I wish to report the following interesting case which came under my observation:

Miss ——, age 23 years, small of stature, of good family history, has one older sister who menstruated quite young; has never menstruated. About a year and a half ago she and her mother came to me with the following history: when she was born, it was discovered that there was no anal orifice and she was given up to die by the physicians, but after a few days straining the nurse noticed that a small amount of meconium was escaping from the vulvar orifice. This increased in quantity and she began to thrive, but had great trouble with her bowels until about ten years ago; had to use enemata or take salts to secure a passage. For the past few years she has not been troubled in this way, but when the bowels are loose can not control the movements well and in consequence sometimes soils her linen. When the bowels are not loose she has no trouble but must go on rather "short notice," sometimes. She further stated that for the past few months, she had at irregular intervals, experienced vague pains in her back and abdomen, which she thought were caused by the menstrual molimen, hence the consultation. On making a physical exam-

[1] Reference Hand Book, Vol. I, page 287.

ination I noted the following: A well-formed girl, small of stature; weighing about one hundred pounds; mammæ well-developed and perfectly formed; measurements with the pelvometer showed the following dimensions: Across spines of the ilium, twenty-four centimeters; across from crest to crest, twenty-five centimeters; bis-trochanteric, thirty; conjugato (external), eighteen. The pudendum was covered with a normal growth of hair. The labia majora were hardly so full as the normal in one of her build. The nymphæ and clitoris were well-developed. On separating the nymphæ, a normal urethral meatus presented. The hymen was somewhat rudimentary but fairly well outlined and caruncular myrtiformes fairly well marked. The vestibule and fourchette were normal. In fact, the entire pudendum was normal.

Extending from the fourchette posteriorly for about two centimeters and about one centimeter in breadth, was a band of delicate skin, very closely allied to mucous membrane. From this back to the tip of the coccyx the appearance was that of a normal perineum, the skin containing the usual amount of pigment, but no signs of an effort at the formation of an anus. The ostium vaginæ, in passing the finger, seemed quite normal, but after the examining finger had penetrated to the depth of two and a half or three centimeters, it came in contact with an annular constriction which was evidently the internal sphincter of the rectum. When told to contract the sphincter, its grasp was quite perceptible, but nothing like the force of the normal muscle. Just beyond this the finger came in contact with well-moulded feces and quite a roomy rectum. Bimanual palpation disclosed a narrow band running from one side of the pelvis to the other. On the left side, a quite movable body could be felt, which appeared about half the size of a normal ovary. This is undoubtedly a rudimentary ovary, as pressure on it causes that peculiar sensation complained of when the normal ovary is pressed. On the right side, occupying the same relative position, was a small, firm body about one centimeter in diameter. This was no doubt the rudimentary right ovary. There was no evidence of a uterus, except the narrow band which crosses the pelvis, corresponding to the upper border of the broad ligament. The bladder was normal in every respect, and a small speculum introduced showed the mucous membrane to resemble that of the rectum. From the explanation of the father, who had consulted me relative to the case before the patient presented herself, I had expected to find an *anus vestibularis*.

J. W. BULLARD, M.D.

A Leaf From an Old Book.

HUDSON CENTER, N. H., Aug. 15, 1898.

To the Editor:—There has recently come into my possession a book the title of which reads as follows: "Medicina Magica tamen Physica: Magical but Natural Physick, or a Methodical Tractate of Diastatical Physick. Containing the general Cures of all infirmities. With a Description of a most excellent Cordial out of Gold much to be estimated.

Published by Samuel Boulton, Salop, London. Printed by T. C. for N. Brook at the Angel in Cornhill, 1665."

The book is inscribed to the "Marquess of Dorchester," by Samuel Boulton, under date of 1646.

In these days of various "gold" treatments it may be of interest to become acquainted with methods employed 250 years ago. To quote our author: "Put foliated gold into a vessel well sealed with *Hermes* seal; put it into our fire till it be calcined to ashes; then sublime it into flores, having his *caput mortuum* or black *terra damnata* in the bottome; then let that which is sublimated be with the same degree of fire united to the same *caput mortuum* that it may be revived by it; so thall all may be reduced into an oyle which is called Oleum Solis; the dose hereof is 2 or 3 grains; And out of this Mercury of *Sol* thou maiest also by the spirit of wine extract an high redness which will contain the cure of all diseases curable in nature, which is a true *aurum potabile*, and much to be estimated."

A most interesting feat of surgery is described as follows:

"A certain man of *Bruxels* being at *Bolognia* did in a fray lose his nose; and going to *Taylaicoza*, a Chyrurgeon living there, to consult how to have a new nose; and fearing the cutting a piece out of his own arm, he hired a porter for a good summe of money to have one cut out of his arm; which being done, and the cure performed, the man of Bruxels returned home."

This result appears to be eminently satisfactory and worthy of being ranked with the achievements of modern surgery, but note the after history of the case:

"About 13 months after, he felt his nose suddenly grow cold, and within a few days after it rotted and fell quite off; And he with many others, wondring at the strange chance, enquiring of the cause, it was found that just at the same instant that the nose grew cold, the Porter at *Bolognia* died; the truth whereof, as Helmont writes, many at *Bruxels* will testifie."

Our author shows true courage and approximates the modern standpoint in combating the then prevalent belief in the almost universal efficacy of blood-letting.

"Some say many have amended upon letting blood. I deny it not, but that was not the cause of the recovery, but natural heat, stirred up, set upon and conquered the disease, which heat might have been better stirred up, especially by Purgation at the beginning when there was strength; by which means also the cause of the disease being partly taken away, the part is much relieved. Thus you see the madness of them that are so forward upon every occasion, time, and age, to let blood; whereon, how many dangers follow, I appeal to Experience. And this is the true cause why Feavers are so seldome cured. I would physicians would follow nature, and leave off one to swear himself a slave to *Galen*, another to *Avicen*, a third to *Paracelsus*. These men were great, but when they strove to defend their owne Opinions, they often erred."

Let us allow our author to display his knowledge of physiology, by quoting his description of the urine: Urine is an Excrement of the second Concoction, done in the Liver, or rather in the Veines, from whence by the emulgent veins it is sent to the reins, yet mixt with blood, out of which by the Uriters it is as it were percolated and strained and so sent to the bladder, where also it abideth a while, and then is by its passage cast out; Hence it appears that the urine hath a great communion with most part of the body; for it hath great affinity with the Liver, Reins, and Bladder; for by these parts it passeth."

Perhaps the most interesting passage in the book is the description of the wonderful weapon salve compounded of brain tissue, Egyptain mummy, etc., mixed only when the auspices of the moon and planets are favorable, and applied daily, not to the wounded part but to the weapon with which the wound was inflicted.

HENRY O. SMITH, M.D.

Normal Salt Solution.

CHICAGO, Aug. 17, 1898.

To the Editor:—Have just been reading the really valuable article, "Saline Infusions" (*vide* JOURNAL, August 6, p. 306), and its suggestions will doubtless have great weight with many practitioners. In view of that fact, I thought it might be well to call attention to a typographic error in the fourth line from the top of page 307, where it directs a 6 per cent. salt solution when it should say .6 per cent. More especially did I think it necessary, since I saw no correction in last week's number. Life-saving measures ought to be well known, and this certainly is one.

Truly yours,

C. H. MILLER, M.D.

Of course our correspondent noticed what was so obvious

that the necessary punctuation mark in front of the figure six (.6) was omitted, and its absence escaped the attention of the proof-reader. But the formula was correctly stated in the preceding column of the same article, as a drachm to the pint. According to Foster ("Text-book of Physiol.") 0.6 per cent. is a normal solution. Howell ("Am. Text-book of Physiology," p. 362) states 0.9 per cent. is the "physiologic salt solution." Foster's Dictionary states that a solution of $\frac{1}{2}$ to $\frac{3}{4}$ per cent. causes little or no change in animal tissues with which it comes in contact, and hence is called "indifferent" (or *normal or physiologic* salt solution), and is used in physiologic experiments and microscopy whenever it is desired to keep the tissues as nearly normal as possible (Wood, "Ref. Handbook"): Normal salt solution, gm. 15 to 2 liters.

Ethics as Practiced.

CONSHOHOCKEN, Pa., Aug. 15, 1898.

To the Editor:—It seems to me that this letter is a good text for an editorial on "Medical Ethics." Is this the ethics recognized by the New York profession and recommended by a teacher in a medical college, even though a subordinate?

Respectfully, GEO. M. STILES.

BROOKLYN, July 7, 1898.

To whom it may concern:—This is to certify that I am acquainted with the methods of the International Fidelity Rupture Cure Co., and am satisfied that it is a work which any doctor, whom this Co. may consider competent and reliable, can take up in connection with his regular practice, with great advantage to himself, and at the same time keep within the bounds of Professional Ethics. Yours respectfully,

HERBERT A. RUSSELL, M.D.,
Demonstrator of Anatomy at Long Island College Hospital.

P. S.—The above is a verbatim letter from Dr. Russell, who is using this treatment in connection with his practice.

NEW YORK, Aug. 13, 1898.

G. M. STILES, M.D., Conshohocken, Pa.

Dear Doctor:—We have a positive cure for all forms of hernia that can be retained with a support, and can demonstrate the truth of our assertions to your complete satisfaction. With the great number of people afflicted with hernia at least one in every ten—here is a field that is practically unoccupied, and from which large fees are obtained. We receive from $100 to $500 for a guaranteed cure in adults. Children are cured for less.

You can use this treatment in connection with your practice and make from $3000 to $8000 per year; or, if you prefer to make a specialty of it, as many do, the income ranges from $6000 to $15,000 per year, and only a few hours each day are devoted to the work.

The pay is certain and prompt, and all the disagreeable features of a general practice are eliminated.

This treatment is strictly ethical, for there is nothing secret about it. To each physician engaging in the work, every part of it is explained explicitly.

If you are interested in this, and will write to us by return mail, we will give you all the information at our command, and will, if you desire, call upon you personally and explain to you our method of starting you in the business. Respectfully yours, INTERNATIONAL FIDELITY RUPTURE CURE CO.,

Per B. H. TEMPLE.

Remarks of Dr. Egan at Detroit Conference.

SPRINGFIELD, ILL., Aug. 19, 1898.

To the Editor:—As my reply to the question asked at the recent Conference of States and Provincial Boards of Health at Detroit, relative to the principal line of work of the Illinois State Board of Health, is incorrectly reported in the JOURNAL of the 20th inst., I will ask you to kindly print my remarks in full, a copy of which accompanies this. Very truly yours,

J. A. EGAN, Sec. Ill. State Board of Health.

DR. J. A. EGAN—I regret to state that the principal line of work of the Illinois State Board of Health is in connection with the enforcement of the Medical Practice Act, the duties pertaining to which have so increased during the past few years that the Board has really become one of registration and examination. It is earnestly hoped that before this Conference again meets the law will be so changed that the Board will have an opportunity to perform its legitimate functions. Notwithstanding, that for years the Board has recommended the enactment of a law creating a State Board of Medical Examiners, to examine and license physicians and midwives, all efforts to obtain the desired legislation have been futile. There are, however, excellent reasons for believing that relief will be obtained during the coming year. As an illustration of the duties devolving on the Board incidental to the Act referred to, I will state that during the past year the Board has issued licenses to 875 physicians on presentation of diplomas and has examined 35 physicians whose diplomas are not accorded recognition. Fifty non-graduates in medicine and seventy-five midwives were also examined. During the same period the Secretary answered 11,473 communications, and the Board instituted prosecutions against 94 violators of the Medical Practice Act and took steps whereby 100 more were compelled to desist from practice. The above represents only a part of the duties occasioned by the Act. Aside from the maintenance of an efficient inspection and quarantine service at Cairo and other points in the southern portion of the State from September 7, the date on which yellow fever was announced as existing in New Orleans, to November 7, when the disease was entirely stamped out in Memphis, 100 miles south, very little outside of the ordinary routine work has been done by the Board in the line of sanitary investigation during the year. Whenever it has been found necessary or desirable, local boards of health have been assisted in the conduct of sanitary measures. All epidemic outbreaks throughout the State have been promptly investigated, and wherever no local boards of health existed efforts have been made to have such established. The sanitary condition of several of the State Institutions have been inspected, and in connection with the University of the State, analyses of the water supplies of the State have been made. Owing to a decision of the supreme court of the State adverse to the Board, no attempt has been made to enforce the school vaccination order, and on account of defects in the law creating the Board, it has been found impracticable to obtain any system of vital statistics. The existing conditions can be little bettered until legislation is obtained. The creation of a State Board of Medical Examiners is absolutely imperative, and sanitation would be much better promoted were laws also enacted establishing local boards of health, making the appointment mandatory, not optional as at present. There are several cities in the State, the populations of which run from 1000 to 10,000, which at present have no local boards of health.

PUBLIC HEALTH.

Bubonic Plague again Epidemic.—Press reports of August 17 quote official reports from Bombay, of the preceding week, as summing a total of 103 deaths (*vide* JOURNAL, Aug. 20, p. 429).

San Juan Board of Health.—General Miles has organized a board of health in San Juan; and when they are generally organized and are doing their good work all over Cuba, Porto Rico and the Philippines, the day of filth diseases and the deadly reign of General Bacillus will begin to be numbered.

A Coming Report on Typhoid Fever.—A Washington dispatch of August 17 states that Surgeon-General Sternberg has appointed a Commission to inquire into the cause and prevention of typhoid fever in camps. The commission will consist of Major Walter Reed, U. S. A.; Major Victor C. Vaughn, division surgeon of volunteers, of the University of Michigan, and Major Edward O. Shakespeare, brigade-surgeon, U. S. V. No more competent commission could have been selected.

New State Health Officer.—The Governor has named Walter Frazer Blunt, M.D., of Galveston, Texas, as State Health Officer to succeed the late Dr. Swearingen. In 1878 Dr. Blunt was appointed as State quarantine officer, and held the position for many years, first under State Health Officer Swearingen, then under Dr. Rutherford, and again under Dr. Swearingen. He resigned the position about eighteen months ago, being in ill health. During the quarantine troubles last fall he assisted Dr. Swearingen, and while Dr. Swearingen was so ill Dr. Blunt was called to Austin to take charge of the Health Department.

A New Focus of Endemic Bubonic Plague has been unearthed by R. Koch in the course of his travels in Africa. It is at Kiziba, on Lake Victoria Nyanza, and has hitherto been restricted to this locality, but there is danger of its spreading on the completion of the railroad now being built by the English to connect the lake with the Indian Ocean. The natives live almost exclusively on bananas, which they plant in groves so dense that no light nor air can penetrate, and these groves swarm with rats. Koch considers that effective measures will, in time, eradicate this disease, which is primarily a rat disease.

The Paris Sewage Park.—The luxuriance of the vegetation on these fields is remarkable; all kinds of vegetables, medicinal plants, etc., thrive to perfection, irrigated with water from the Paris sewers, which is so purified in its course that it emerges from the "park" limpid and pure, as visitors taste and exclaim. There is no perceptible odor except in the midst of a net-work of the irrigating canals, and a few steps beyond it is impossible to distinguish it. All fear of contaminating the atmosphere of the vicinity has proved groundless. The number of bacteria is reduced to approximate spring water, and the authorities claim that the infection of the Seine will diminish with increased areas appropriated for sewage parks, until it will cease altogether when all the sewer water from the city shall be spread out thus on the fields. The amount thus far utilized is 20,653 cubic meters to the hectare; there are 795 hectares devoted to the purpose.

Research Laboratories at London.—The new government laboratories in Clement's Inn are found to be a great convenience. No fewer than thirty-eight rooms, specially constructed and fitted with perfect appliances, are at the disposal of the staff. It appears that in 1867 the number of samples examined and reported upon was 9,055; in 1877, 14,024; in 1887, 39,244; and in the twelve months ended March of the present year, 64,664; of these, 28,875 were samples of beer and brewing material, 11,403 spirits, 14,872 snuff and tobacco, 41 coffee, 6,423 miscellaneous articles, and the standardization of excise instruments and 3,050 specimens of the contract supplies of government departments. The principal laboratory is specially adapted for the examination of beer and spirits. A set of rooms are used for the analysis of crown contract samples and of food and drugs as well as tobacco. The new building was constructed by the Board of Works at a cost of between £25,000 and £30,000.

Sanitary Workers Should be Divorced from Politics.—The Secretaro of the State Board of Health was re-elected for the fourteenth time, which is a highly appreciated compliment. He also, with the next issue of the *Bulletin*, will enter upon his twelfth consecutive year as editor thereof. This honor is not unusual, but is rather a practical exemplification of civil service principles. So far as we know, Dr. Pelletier, Province of Quebec; Dr. Bryce, Province of Ontario; Dr. Young of Maine; Dr. Watson of New Hampshire; Dr. Lindsley of Connecticut; Dr. Abbott of Massachusetts; Dr. Frazer of Delaware; Dr. Porter of Florida; Dr. McCormack of Kentucky; Dr. Laine of California; Dr. Jennings of Arkansas; Dr. Sewell of Colorado; Dr. Baker of Michigan; Dr. Johnson of Mississippi; Dr. Probst of Ohio; Dr. Swearingen of Texas and Dr. Lee of Pennsylvania have been the secretaries of their respective provinces and states since their State Boards of Health were organized. There were others, as Dr. Metcalf of Indiana, Dr. J. Berrien of Tennessee and Dr. Cochran of Alabama, who maintained like relations to their respective states until death terminated their services. The position is one that by common consent seems to be, and should be, awarded independent of politics, religion, or on purely personal grounds.—*Iowa Health Bulletin.*

Smallpox Prevalence in North Carolina.—The *Bulletin* of the State Board of Health of that State for July reports a material spread of variola, both as to increase of cases and of localities infected. About the middle of July there was known to be four infected points in Iredell County; also at Asheville, 1 case, which is nearly well; Catawba, 6 cases in one family in the southeastern part of the county; Cleveland, in Rowan County, 7; Reidsville, 1; Durham, 1. When the superintendent of Rowan County was first notified of the existence of smallpox at Cleveland he found 20 cases, 13 of whom had recovered. They had been diagnosticated as chicken-pox, urticaria and pemphigus, and no precautions whatever were taken in consequence. The people, we are told, called it "elephant itch," not a bad name, as the eruption of smallpox is about the biggest thing of its class. A negro from Cleveland went to Reidsville and was there two days with an eruption of smallpox on him before he was discovered. During that time he went on an excursion and mingled promiscuously with his people. One of these who had been exposed went from Reidsville to Durham in the beginning of the eruption stage. Although sought for he was not found until next morning, after he had slept in the same room with several others. Reports from Asheville, Iredell County, generally, Cleveland and Durham, show everything in good shape except the reluctance in too many instances of the people to be vaccinated. The reports, however, from Catawba County and Reidsville are not at all satisfactory, and we fear a spread of the disease in these localities.

Relations and Conditions of the Soil to the Spread of Disease.—Dr. W. H. Welch has shown that the possibilities of infection from soil contaminated with disease germs are numerous, and often intricate. The list of diseases whose causation has been shown to stand under conditions in more or less direct relation to contamination of the ground with their specific germs is a long one. Among the more important may be mentioned malaria, typhoid fever, cholera, yellow fever, dysentery, tuberculosis and the summer diarrhea of infants. Experience teaches, unmistakably, that contamination of the soil with organic refuse favors the development and spread of such diseases as these, and that the drainage and purification of the soil by proper systems of sewerage are among the most effective measures for their prevention. No more instructive illustration of the value of modern methods of public sanitation can be found than the inability of Asiatic cholera to secure a foothold during the last two European epidemics in clean cities, with proper sewerage and water-supply, and its ravages in notoriously filthy or insanitary cities, such as Toulon, Marseilles, Naples, and formerly Hamburg, Authorities have differed as to the relative value of sewerage and of water-supply in influencing the prevalence of typhoid fever. We need not pause here to discuss the matter. Both factors are important, the drinking water usually the more important. But it is sufficient for our purpose to show that purification of the ground by proper disposal of sewage is not one of the factors in determining a reduction in the occurrence of typhoid fever and other diseases. It is by no means an easy matter in all cases to assign to each one of the various recognized elements which go to make up an entire system of satisfactory municipal sanitation its due share in the beneficial result, for it rarely happens that one is introduced by itself alone, and the harmonious working of the whole system is often necessary to secure the best results from the individual factors, such as pure water supply, efficient sewerage, good drainage, cleanliness of streets, improvement or removal of insanitary quarters, thorough sanitary inspection of dairies and food stuffs, public disinfecting establishments, hospital for infectious diseases, municipal laboratories, etc. In some instances, however, the conditions have been such as to furnish conclusive demonstration of the separate influence of the introduction of effective sewerage upon the death-rate from typhoid fever.—*The Sanitary Record.*

SOCIETY NEWS.

American Microscopical Society.—The twenty-first annual meeting of this Society will be held in Syracuse, N. Y., Aug. 30, 31, and Sept. 1, 1898. Tuesday, August 30, 10 A.M., will occur the addresses of welcome, followed by the reading and discussion of papers. On the evening of Tuesday will occur the annual address by the acting president, Prof. V. A. Moore of Cornell University. Wednesday afternoon there will be given demonstrations of the projection microscope and of laboratory apparatus, and in the evening will occur the soirée. Thursday afternoon the Society will be shown much of interest in the New York State Institution for Feeble-Minded Children. The Vanderbilt Hotel will be headquarters, with a special rate of $2 per day. A small dining-room, known as the "ordinary," will be reserved for the exclusive use of members. Owing to the State Fair, held in Syracuse from August 29 to September 3, a round-trip ticket from any station in New York State may be purchased for half the usual rate and 50 cents (which entitles the holder to one visit at the Fair). All interested persons are invited to be present, join the Society and read and discuss papers or demonstrate apparatus and methods. For particulars as to membership, etc., letters may be addressed to Prof. S. H. Gage, Ithaca, N. Y., or Dr. A. C. Mercer, Syracuse, N. Y.

The Fourth International Congress for the Study of Tuberculosis in Man and Animal, held in Paris, France, July 27 to August 2, concluded its sessions by adopting the following resolutions:

1. While awaiting the time when tuberculosis shall be included among the contagious diseases requiring official notification, all public places should be provided with hygienic cuspidors and placards warning against their disregard.

2. Public authorities everywhere are urged to set the example by installing hygienic cuspidors in all places under their jurisdiction, especially—and this is the most important feature of the reform in schools of all kinds.

3. Protesting against the admittance of tuberculous patients to institutions for convalescents open to patients with other diseases.

4. Urging the establishment of public free sanatoria and asylums for convalescent children.

5. Endorsing the founding of as large a number of small sanatoria as possible by private initiative on the part of physicians and also by the public.

6. Recommending periodic international reunions for the further study of tuberculosis and especially of its prophylaxis.

7. Endorsing the courses in hygiene recently inaugurated by the Antituberculosis League in Paris and urging their adoption elsewhere.

8. Requesting the authorities to investigate means to prevent the use of fraudulent tuberculin for the purpose of concealing the existence of tuberculosis in animals destined for export.

The Congress also proclaimed the urgent necessity of legislative measures requiring: 1. The separation of diseased from healthy animals. 2. The sale of diseased animals for any purpose except for slaughtering. 3. The constant surveillance of dairies and the immediate slaughter of every animal affected with tubercular mammitis. 4. The sterilization, or at least the pasteurization, of all milk used in the manufacture of butter or cheese on a large scale. 5. The universal adoption of a service of meat inspection on lines similar to those followed in Belgium the last few years. The Congress also passed a vote of thanks in recognition of the active support rendered the League in the prophylaxis of tuberculosis by the presidents of the French universities.

San Francisco County Medical Society. The regular monthly meeting held August 2, was devoted to a discussion of "Cancer of the Stomach." Dr. Philip King Brown treated of the pathology, Dr. William Fitch Cheny the diagnosis and Dr. Emmet Rixford discussed the treatment, confining his remarks entirely to the surgical treatment, practically the only aspect of the subject. Dr. Brown said that while scirrhus was the most common form and adenocarcinoma the next most frequent variety met with, but little attention had been given to the form of pigment-celled carcinoma which, though not at all common, still was met with occasionally and was deserving of more notice than generally given it by writers. He gave a careful résumé of the facts known as to the macro- and microscopic appearances of the various forms of cancer in this location. Dr. Cheney, in discussing the diagnosis, referred to the tabulated, though unpublished, results of an examination of 150 cases in which the disease was found 20 times to have appeared in a subject under 30 years (between 20 and 30), and 17 times between the ages of 30 and 40; these cases seem to somewhat controvert the accepted idea that the disease is very rare under the age of 30 years. Of these 150 cases, 11 gave a family history of cancer, showing that while the factor of heredity may be exaggerated in many instances, it is certainly an element to be considered. In no instance in this series of cases could it be ascertained that injury played any part as a causative factor. The symptom complained of as the most aggravating and prominent, in this same series of 150 cases, shows pain to take the first place, being noticed in 130; vomiting was complained of in 128; while a tumor had been noticed by the patient or was at once perceptible in 115 cases. Only 36 cases had vomited blood, indicating that this factor is not so common as generally supposed. Dyspepsia has been noticed and was aggravated in 38 cases. Pallor, loss of flesh and the cachexia should lead, if combined with any one of these symptoms, to a careful examination of the abdomen, the possibility of cancer being suspected. On examination, the abdomen should be carefully inspected, for it was found in 76 of the 150 cases that on careful examination, or rather on simple inspection, a tumor could be more or less well discerned; it may be that the tumor does not appear at first glance, but as the abdomen is longer inspected the shadowy outline will become evident. Simple inspection will very often reveal an abnormal pulsation of the abdominal aorta. The fact was accentuated that the tumor may be at the pylorus and yet be found in almost any part of the abdomen, for the reason that there is so often enlargement of the stomach, thus allowing the tumor to sag down or to assume a location quite other than would perhaps be expected; because the tumor is found at some point other that the true pyloric location, is not any evidence that it is not a tumor of the pylorus. The value of the abnormally increased peristaltic wave was pointed out, as showing the presence of an increased muscular action, or an unusual development of the muscular coats of the stomach contents through the lessened lumen of the pyloric orifice. This peristaltic wave may be stimulated by striking the abdomen with a wet towel, or by rather rough percussion. Inflation of the stomach, either by means of bicarbonate of soda and tartaric acid, or by gas direct, should always be resorted to; by this means we may clearly ascertain the presence of other tumors of metastatic origin. The proceeding of inflation is perfectly safe, in the doctor's opinion, and has nothing to discourage its use. On palpating the abdomen it may occur, and in fact does often occur, that the tumor will be outlined one day, and perhaps not the next; this should not be regarded as an unfavorable factor in the diagnosis, for many circumstances may prevent the discovery of a tumor on any particular occasion; if it be found once it will be found again if persistent effort is made. The chemic examination of the stomach contents and test meal, though it should always be undertaken, is not so fruitful of good results as could be desired. It should be accepted only as one link in the chain of evidence. Tissue fragments, too, do not always throw much light on the true condition, for the arrangement of the cells has a great deal to do with the diagnosis from this standpoint, and the cells derived from washings are almost always much broken up and disarranged. If a portion of cancerous growth can be obtained, of course the diagnosis presents no further difficulties. The matter of the differential diagnosis was brought out very forcibly and the many points to be considered were carefully outlined. Dr. Rixford, in dealing with the question of treatment had prepared a careful list of the various operations in chronologic order, that had been advanced and tried for relieving the condition of cancer of the stomach. In speaking of the difference in the percentage of mortality between the first operations and those of the present day in pylorectomy, the point was emphasized that early operation is of vital importance and has had as much as any one thing to do with the decreased mortality. It was very difficult to gain the consent of any patient at first for the operation. Dr. Rixford called attention to the reports at the late congress at Moscow, when the returns

from a large number of operators were given; pyloroctomy resulted in a mortality of 37.0 per cent., while the palliative operation of gastro-enterostomy exhibited a mortality of but 25 per cent. Very few of the cases operated on have lived for more than two years; it is largely on this account that the majority of the English surgeons are not disposed to favor operative interference in cancer of the stomach. As for gastrectomy, the Doctor was of the opinion that the operation was too young to express any opinion as to its usefulness, but he was rather inclined to look upon it as an operation with a very limited field, and one that, after a while, would be seldom done. The subject was discussed at considerable length by Drs. J. Henry Barbat, F. B. Carpenter, Dudley Tait and others.

NECROLOGY.

FOSTER PRATT, M.D., of Kalamazoo, Mich., died August 12 of angina pectoris, while seated in his library at his home with the evening paper in his hand. He had a severe attack of a similar character on August 7, while visiting relatives in a neighboring city, from which he had not completely rallied, although he had been able to be out, and two days before his death was actively engaged in attending to his professional duties. Death came peacefully and without warning as he sat in the company of his wife. Dr. Pratt was born in Mt. Morris, N. Y., Jan. 9, 1823. He spent his boyhood days in New York, completing a course in the Franklin Academy and later became principal of the Angelica Academy, which position he held until compelled to give it up on account of sickness. In 1844 he went to West Virginia to take charge of a private school in Hampshire County. He there married Miss Mary L. Gamble, studied medicine with Dr. A. J. Sangster and later went to Philadelphia and was graduated from the University of Pennsylvania in 1849. He practiced in Virginia until 1856, when he came to Kalamazoo, where he has since continuously resided. He early established a large practice, but gave it up to accept a position as surgeon of the 13th Michigan Volunteer Regiment. His regiment participated in the battles of Pittsburg Landing in 1862, the engagements of Stone River, Chickamauga, Chattanooga, Lookout Mountain, Missionary Ridge and Sherman's march to the sea. In 1891 he was made president of the village of Kalamazoo and at numerous other times he has been placed in official capacities. To him the city is largely indebted for its present system of sewerage which was established while he was one of the Commissioners of Sewers. He also took a very important part and active interest in providing the city with its water-supply. He has been a member of the AMERICAN MEDICAL ASSOCIATION for twenty years and has been a member of its judicial council. He was an honorary member of the American Medico-Psychologic Association, was twice president of the local Medical Society, once vice-president and acting president of the State Medical Society and once its president by election. His contributions to literary papers and medical journals were highly valued. In 1882 he wrote a comprehensive review of that portion of the tenth census relating to criminals, paupers, insane, idiots, the blind, the deaf and dumb. He strongly advocated the idea of the restriction of indiscriminate immigration to the United States of objectionable persons or those having a tendency to produce criminals and dependents. He had decided literary tastes and was quite a politician. He was district delegate to the National Democratic Convention at New York in 1868, at Baltimore in 1872 and a delegate at large at Cincinnati in 1880. In his early days he was a political speaker and a fine orator. He was prominent in Masonry, and while secretary of the Grand Lodge, he wrote the present code of Masonic Laws for the Michigan Jurisdiction. In 1858 Dr. Pratt was elected to the Legislature, and at the session of 1859 secured by zealous and hard work the first appropriation of any magnitude for the Michigan Asylum for the Insane at Kalamazoo. From that time on he was a staunch and steadfast friend and worker for the asylum. When Dr. E. H. VanDeusen, its former superintendent, was sued for false imprisonment for detaining a patient in whose commitment papers there was some slight irregularity, Dr. Pratt was the earnest and helpful adviser of the asylum and, largely by reason of his suggestions and directions, the asylum was victorious in a very tedious lawsuit. In 1882 Dr. Pratt became a member of the Board of Trustees of the asylum, which position he occupied for twelve years, being president of the Board for four years. Since 1887 he has been a member of the local Pension Examining Board. Dr. Pratt was a man respected by all who knew him, a man of high and honorable aims and virtues, one whose faults were few and small. As a citizen and a friend he is held in tender remembrance by all who knew him.

WILLIAM CARTER OTTERSON, M.D., College of Physicians and Surgeons, N. Y., 1853, died at his summer home in Long Branch, N. J., August 17. He was a son of Rev. James Otterson and was born in Roslyn, Long Island, Sept. 17, 1828. During the Civil War he served as surgeon U. S. V. from Dec. 24, 1861, to May 25, 1864. Five years ago he gave up the duties of his profession in consequence of paralysis of the right side, after having practiced twenty-five years in Brooklyn, N. Y., at one address. Two sons and a daughter are his survivors.

OWEN J. WARD, M.D., N. Y. University Medical College, 1865, died at his home in New York city August 17, aged 58 years. He served on the visiting staff of the Gouverneur St. Hospital from the date of its establishment until his death.

W. J. CANNON, M.D., Lambert, Tenn., August 14.——George E. Catlin, M.D., Lake Geneva, Wis., aged 58 years.——Harlow P. Gamwell, M.D., Westfield, Mass., August 12, aged 74 years.——Edwin Gibbs, M.D., Washington, D. C., August 15, at Lynnwood, Va.——Benjamin F. Wright, M.D., Youngs, Ga., August 10.

MISCELLANY.

An Advance in Therapeutics.—A New York physician, of course in an absent-minded way, prescribed protocol, grs. x, as the latest anodyne. He had been reading the war news.

A Prohibitive Tax.—Prof. Enrico Bottini, an Italian surgeon, announces in a public card his retirement from practice because "he was oppressed by the weight of the income tax imposed and was no longer able to meet it."

Antistreptococcin.—Marmorek's new antitoxin for the streptococcus pyogenes is proving successful in the tests at the Paris hospitals in septic wound and puerperal fevers, blood poisoning and other diseases caused by this streptococcus, and also in the complications of diphtheria, against which the Behring antitoxin is powerless.—*St. Petersb. Med. Woch.*, July 11.

Patent on Antitoxin.—Concerning the recent patent granted Prof. Behring, on antitoxin, Messrs. Parke, Davis & Co. of Detroit announce that they will protect and defend purchasers from any legal proceedings brought as a result of their purchase, sale, and use of their serum, having retained the services of Messrs. Betts, Betts, Sheffield & Betts, of New York City, patent lawyers, to fight the monopoly on antitoxin.

Ohio Medical College.—The *Times-Star*, Cincinnati, August 15, says: "They apologize—The AMERICAN MEDICAL ASSOCIATION has apologized to the Ohio Medical College for ousting them from the ASSOCIATION a year ago." This item only shows the ignorance of the *Star* in confounding the AMERICAN MEDICAL ASSOCIATION with the Association of American Medical Colleges, an entirely separate body.

The St. Louis Eye, Ear, Nose and Throat Hospital.—This hospital, located at 500 N. Jefferson Avenue, was opened to the public, April 1, 1898. The Eye Department is in charge of Dr. J. Ellis Jennings, and the Ear, Nose and Throat Department in charge of Dr. Leo Caplan. The ground floor is en-

tirely devoted to the out-door department, and is open to the poor from 2 to 4 P.M. daily, except Sunday. Care is taken to exclude from free treatment persons able to pay for professional services. The institution will be incorporated and have the privilege of giving post-graduate courses in diseases of the eye, ear, nose and throat, and of issuing certificates or diplomas to those who have taken the courses.

Nervous Phenomena in Children.—Willits (*Phil. Med. Jour.* for August 6) says that a perfectly healthy infant should sleep twenty of the twenty-four hours. He condemns the practice of suddenly waking a babe from a sound sleep, so often done for visitors to talk and play with it, as this excitation falls directly on the nervous system and is an important factor in producing nervousness. Startling noises of any sort, as street noises, loud-striking clocks, bells, etc., are to be avoided.

Subclavian Aneurysm.—Moynihan (*Annals of Surgery* for July) discusses the treatment by both excision of the sac and the use of the distal ligature. He advocates the former method and claims for it a far greater chance of recovery, no risk of recurrence, less risk of gangrene, and a probable complete recovery from any affections due to nerve interference. He gives statistics concerning the mortality, gangrene and recurrence after operation in both of these methods, recurrence after operation being noted in 5 per cent. of the cases after ligature.

Medico-Legal Surgery.—The September number of the *Medico-Legal Journal* will contain an article on "The Progress of Medico-Legal Surgery," by the editor, Clark Bell, advance sheets of which have been sent to the JOURNAL. It gives a sketch of the organization of the Army and Navy Medical Corps and a full account of railway surgery in the United States and of its societies and associations, including the Section of Medico-Legal Surgery of the Medico-Legal Society, which is largely a body of railway surgeons. The article gives, briefly, a statement of the advances in surgery since the Civil War, and a series of letters from eminent surgeons with their opinions in regard to this subject, and would be a useful one for reference as to questions of military, navy and especially railway medical organizations in this country.

Thyroid Medication is generally considered injurious in exophthalmic goiter, but O. Martin urges all to cautiously try it in this disease before resorting to severer measures, as he has witnessed a number of severe typic cases permanently cured with this alone. He describes one of them in the *Presse Méd.* of July 13, nothing left but a slight tremor after four months of 40 to 20 centigrams a day of the dessicated thyroid extract. It has also proved effective in chlorosis. Capitan relates a number of cases which had resisted iron and tonics, but yielded at last to thyroid medication, indicating a thyroid origin for certain forms of this disease.

Township Trustee can not Bind County to Pay.—Section 6718 of Burns' Revised Statutes of Indiana of 1894, provides that the board of commissioners of each county shall constitute a board of health ex-officio for the county, whose duty it shall be to protect the public health, by removal of all causes of diseases when known, and in all cases to take prompt action to arrest the spread of contagious diseases, etc. But the appellate court of Indiana holds, in the case of Board of Commissioners of Perry County vs. Bader, June, 1898, that a claim for services as watchman during time of quarantine against smallpox, rendered by order of the township trustee, can not be collected from the county, through the board of commissioners, it showing no liability upon the part of the county.

An Ancient Hospital.—At Baden, near Zurich, Switzerland, in connection with recent excavations at Windisch, the Roman Vindonissa, an ancient military hospital has been discovered. It has fourteen rooms, which appear to have been well supplied with medical, surgical and pharmaceutic apparatus, including probes, tubes, forceps, cauterizing implements, and even safety-pins; medicine spoons of bone, silver measuring vessels, jars and pots for ointments, etc. Some coins were also found, those of silver being of the reign of Vespasian and Hadrian, those of copper bearing the effigy of Cladius, Nero and Domitian. At Vindonissa, two great Roman military roads meet, one leading from the great St. Bernard along Lake Leman and then by Aventicum and Vindonissa to the Roman stations on the Rhine; the other from Italy to Lake Constance by the Rhaetian Alps, the present canton of Winterthur, Baden and Windisch. This last point was the station of the seventh and eighth legions.—*Scientific American*, Aug. 13.

A Skeptic in Georgia.—We once heard a very eminent and scholarly Bishop say that, in his experience, some learned men were the greatest fools. We do not care to apply this harshly to Prof. Koch, but will mildly suggest that he is out of his reckoning. Prof. Koch of antituberculosis fame has made a new discovery. He has come forward with the startling announcement that he knows what causes mosquitoes? It's mosquitoes. He might just as well have included sandflies, gnats, and bedbugs. The *New York Times* cleverly turns the tables upon the professor. It says: "Now, Prof. Koch may be a very great man, but he has simply begged the question. If mosquitoes cause malaria, what causes mosquitoes? That's what this patient world wishes to know. Tell us how to get rid of the mosquitoes, and we shall not worry about the malaria." The presumed origin of the mosquitoes is water, yet Dr. Koch insists that malaria is not water-borne. The facts are against him, but just now he has his mosquito theory in full blast.—*Augusta Chronicle.*

Gynecologic Surgery of the Insane.—Hobbs (*Am. Jour. of Obstet.* for August), in a paper on "Surgical Treatment of Patients at the Asylum for Insane," London, Ont., says that "the work in gynecologic lines shows that perhaps one-sixth, if not one-fourth, of all the women in asylums for the insane are there because of the special infirmities of their sex." Of 136 women, 126—17 per cent. of the female inmates—had organic lesions or malformations incompatible with normal genitalia. Of the 126, the condition of 121 necessitated operative measures for the amelioration of physical disorders which either caused or complicated disturbance of the nerve centers. The impossibility of obtaining reliable data from the insane as to the origin of the ill-health made actual examination necessary, and always under anesthesia, ether being used, and, in these patients, being rapidly recovered from and rarely causing nausea or vomiting.

Speech Defects.—Scheppegrell (*New Orleans Med. and Surg. Jour.* for August) writes on the etiology and treatment of stuttering, stammering, etc., and groups the forms of speech defects in two classes: paralalia and dyslalia, the former referring to defective speech, lisping, etc., and the latter to difficult or spasmodic speech, as stammering and stuttering. He considers prophylaxis of the utmost importance, and believes the inclination of mothers to teach their children "baby talk" can not be too severely condemned, as they become so accustomed to this method of speech as to make it difficult to change it. He points out that girls suffer less from the more severe forms of speech defects than boys, and some authors have even doubted the existence of female stutterers, while Cöen of Vienna, places the number at only 1.5 per cent. of the whole number affected. He says that children should not be allowed to associate with stammerers, as the children may not only be influenced but there is also a tendency to aggravate the defect in the case of the stammerer.

Exhibition of Rupture to Jury.—In the personal injury case of what is now styled the Chicago & Alton Railroad Company vs. Clausen, in which the supreme court of Illinois affirmed a judg

ment against the railroad company, and denied a rehearing, June 10, 1898, it was complained that the trial court had improperly permitted the plaintiff below to exhibit to the jury a rupture alleged to have been caused by the accident set forth in the case. This leads the supreme court to say that it is primarily within the discretion of the trial court to permit an injury to be shown to the jury for any legitimate and proper purpose that will aid in the determination of the issue; and that, while it is questionable whether the exhibition referred to was proper, inasmuch as the existence of the rupture, and the nature and extent of it, were not controverted by the defendant, and it is questionable whether its only effect would not be to excite feeling, rather than to aid in settling any disputed question, the court does not feel prepared to say that such was the case, or that there was a clear abuse of the discretion confided to the trial court.

A Medical Relief Yacht.—Mr. Alexander Van Rensselaer's yacht *May*, the services of which were tendered the United States Government by the owner, sailed August 5, for Porto Rico. It has aboard the four special commissioners appointed by the National Relief Association: Hon. William Potter, ex-Minister to Italy, chairman; Mr. Alexander Van Rensselaer, Mr. Louis C. Vanuxem and Dr. G. G. Groff. The yacht will carry supplies for the soldiers, which, by order of Surgeon-General Sternberg, will be placed at the disposal of Colonel Greenleaf, Chief Surgeon of the troops under General Miles' command. Having discharged the supplies, the yacht will carry to the United States any sick or wounded soldiers or sailors that may be awaiting transportation.—(*Phila. Med. Journal*, August 6.) [The press dispatches of August 20 noted the arrival of the vessel at Ponce. Mrs. Van Rensselaer was slightly injured by a stumbling horse while riding from Ponce to the military camp.]

New Medical Faculty.—The faculty of the Baltimore Medical University, which had been depleted by the resignation of a number of its members, has been reorganized with the following roster: Jas. G. Linthicum, emeritus professor of principles and practice of medicine. Hampson H. Biedler, principles and practice of surgery and clinical surgery. Wm. A. B. Sellman, diseases of women and children. J. W. C. Cuddy, theory and practice of medicine and clinical medicine. E. Reid, diseases of the nervous system and diseases of the throat and chest. Frederick C. Jewett, physiology and hygiene. Theodore Cook, Jr., diseases of the eye and ear. A. G. Barret, toxicology and chemistry. Z. K. Wiley, anatomy and pathology. C. Urban Smith, materia medica and therapeutics and clinical professor of diseases of the stomach. The adjunct faculty is: H. J. Hankel, demonstrator of anatomy. Howard Bryant, lecturer on medical jurisprudence. Shelton Law, lecturer on minor surgery and bandaging. S. Leroy Robinson, lecturer on practical pharmacy. H. A. Huland, assistant demonstrator of anatomy. J. T. McCarthy, lecturer on diseases of the skin. N. J. Kasten, lecturer on histology and bacteriology. M. J. Kelley, demonstrator of pathology. Edward C. Moriarity, assistant demonstrator of pathology. J. J. Valentini, lecturer on diseases of nose, throat and chest. Geo. W. Lautenbach, assistant to the chair of nose, throat and chest. W. J. Chappell, lecturer on diseases of nervous system. George A. Strauss, lecturer on applied therapeutics. Thos. A. Poole, assistant to chair of eye and nose.—*Baltimore News.*

Presumption as to Qualification of Physician.—The rule seems to be that, when the question of license arises collaterally in a civil action between the physician and one who employs him, due qualification under the statute will be presumed, and the burden of proof is upon him who denies such license. So says the supreme court of Iowa, in the late case of Kossuth County. But when it comes to proving the incompetency of a physician, as of one employed by the board of supervisors to furnish poor persons in the county with medicine and medical aid, so that another physician employed by the township trustees to attend a pauper may recover of the county therefor, the court holds that the same rule applies as where the character of a person is directly in issue, and that the evidence must be confined to general reputation, and particular acts or specific facts are not admissible. And under this rule, the mere individual opinion of the witness is not admissible, and no one will be permitted to speak affirmatively to the character or competency of another, as distinguished from general reputation, solely from rumors or reports. The court can not try collaterally each and every case tending to show the ability or competency of the person whose skill is the subject of inquiry, and, before one is permitted to speak of the character or competency of another, knowledge must appear.

The National Relief Committee on Pure Water for Troops.—The National Relief Committee, through Dr. E. O. Shakespeare, the chairman of its committee on sanitation, has issued a pamphlet address under the title of "Pure, Wholesome Water for all Troops" in which, after showing what has been done by the Surgeon General and the Quartermaster-General of the Army to provide germ-free filtered water for a certain portion of the army, it urges the necessity for boiling all water not thus filtered. It then discusses the necessity for aërating the boiled water to render it palatable and makes various suggestions for accomplishing this. The Committee has adopted the following resolutions:

WHEREAS, in the opinion of the Executive Committee of the National Relief Commission, the supply of the American Armies with germ-free and palatable drinking water is so essential to the maintenance of the health and strength of the men,

Resolved, That the action of the Government in providing the means of furnishing 50,000 of our troops with germ-free drinking water should be most heartily commended; but we would at the same time most earnestly urge upon the responsible authorities at Washington, the necessity of providing, at the earliest possible moment, the means of furnishing the remainder of our armies, namely the other 200,000 men, with equally wholesome quality.

Resolved, That this body hereby expresses its willingness and desire to co-operate in such an effort to the extent of its ability and in any manner possible.

In carrying the last resolution into practical effect the committee on sanitation has communicated with commanding and sanitary officers of armies in the field, inviting attention to the necessity of boiling and aërating the water-supplies of camps, and requesting their views as to the best methods of effecting the purification of natural waters. Meanwhile, it has sent a special commissioner, Mr. Louis C. Vanuxem, to Porto Rico with supplies for the benefit of the hospitals there; and in view of the probable need for apparatus for purifying the drinking water, it proposes sending facilities for furnishing 5000 men with wholesome and palatable water, irrespective of the original quality of the natural supply. The apparatus comprises fifty water boilers, each encased in a removable wooden box for safe transport. Each boiler is about 20 by 11 by 13½ inches, fitted with hinged handles for convenience of transportation and with a rose sprinkling attachment, by passing through which the boiled water, when cooled, may be aërated to ensure palatabilty. A suggestion is made that this aëration may be effected by pumping air through a rose nozzle from such a pump as is used to inflate bicycle tires.

Standard Medical Works as Evidence.—The theory of the plaintiff in the recent personal injury case of Bixby vs. the Omaha and Council Bluffs Railway and Bridge Company, was that he had received a serious shock to his nervous system in a collision of street-car and railway train, and had symptoms indicating locomotor ataxia or some neurotic trouble, although at the time of the trial there was no objective or external evidence of any injury. One physician testified to such symptoms, while three

others insisted that there existed no signs of any disease. Then the plaintiff was permitted, over the objection of the defendant, to read in evidence extracts from a number of admittedly standard medical works, the portions read to the jury treating of the symptoms, and not the cure, of diseases. But the supreme court of Iowa holds that this was reversible error. It says that the question is not whether the courts will use the helps of science in the investigation of truth. There is no controversy on that score. The authorities are agreed that the truths of the exact sciences, the established facts of history, and computations from fixed data may be proven by the works of reputable authorities. This is on the ground that all men assent to their correctness. But it points out that medicine belongs to the class known as inductive sciences. The data are constantly shifting with new discoveries, and the conclusion which may be considered sound today is repudiated tomorrow. A medical work may be standard this year, and obsolete next. And even the opinion of the same author changes in the different editions, owing to new discoveries and a better unerstanding of symptoms. These facts, with the added one of difficulty often experienced by those learned in medicine to determine from the books the nature and extent of injuries and diseases, the court insists, emphasize the necessity of cross-examination and the use of an oath, not only that the theory contained in the books may be known and understood, but that practical skill may apply the science of medicine in each case. Nor does it consider that the admission of medical treatises is authorized by section 4518 of the Iowa code, which says: "Historical works, books of science and art, and published maps or charts, when made by persons indifferent between the parties, are presumptive evidence of facts of general notoriety of interest therein stated." But the court suggests that the same reasoning does not apply to a case where a physician is employed to treat a patient according to a certain system, so that, in determining whether he has in fact followed that system, the books from which physicians of that school are shown to have derived their knowledge may be admissible, for these expound the very principles which he is alleged to have violated; and, under the circumstances, the books themselves would be better evidence than quotations from them. But in Alabama alone, it is said, are medical works received in evidence for general purposes.

Hospitals.

THE new Sternberg hospital only a short distance from Lytle, Ga., was thrown open for the reception of the sick at Camp Thomas, August 16. The hospital has accommodations for 1200, and a corps of Red Cross nurses is in attendance.

OTTO YOUNG has donated a $50,000 building, fully equipped, to the Chicago Home for Incurables as a consumptive ward.

Societies.

The following recent meetings are noted:

Indiana.—Southern Indiana Medical Society, Indiana Springs, August 12.

Iowa.—Southwestern Iowa Medical Association, Council Bluffs, August 18.

Michigan.—Grand River Valley Medical Society, Holland, August 9.

Ohio.—Muskingum County Medical Society, Signal, August 11.

Pennsylvania.—Cecil County Medical Society, Perryville, August 12; Lycoming County Medical Society, Williamsport, August 12.

Virginia.—Richmond Academy of Medicine and Surgery, August 9.

Louisville.

RODMAN.—Dr. Wm. L. Rodman, former Professor of Surgery in the Kentucky School of Medicine, will remove September 1 to Philadelphia, where he goes to accept the chair of Surgery in the Medico-Chirurgical College. Dr. Rodman filled the chair during the last college term, but returned to Louisville at the conclusion of it; he now goes permanently.

NOVEL EXPERIENCE.—Dr. S. J. Meyers, at home on sick-leave from his post at Camp Thomas Division Hospital, relates the following experience, which is decidedly original and uncommon in army hospitals: He had hardly been in the camp two hours when he had delivered a woman of a premature fetus. Standing at headquarters a soldier rode up in great haste stating that a woman was dying in another part of the camp, and soliciting medical aid. The Major commanding the hospital sent Dr. Myers with instructions to do all he could for the patient without assuming any responsibility. The Doctor found one of the actresses at the camp theater in labor, and delivered her in a few moments of an eight months' fetus which was dead. The mother stated she did not know she was pregnant and had not lost a moment's time from her work to the time of her delivery. A labor case in an army camp of 45,000 men is something of a novelty.

Washington.

HEALTH OF THE DISTRICT.—The report of the health officer for the week ended August 13 shows the total number of deaths to have been 96, of which number 51 were white and 45 colored. The principal causes of death were: Nervous diseases, 13; heart diseases, 7; intestinal, 4; respiratory, 17. There were 2 deaths from diphtheria and 1 each from measles and typhoid fever. At the close of the week there were 28 cases each of scarlet fever and diphtheria under treatment.

PHYSICIANS TO THE POOR.—Drs. H. T. Harding and P. C. Hunt have been appointed physicians to the poor, at a salary of $30 per month. Dr. E. A. Gorman has been appointed resident physician of the Washington Asylum, vice S. C. Johnson resigned. Dr. J. Spence Hough of the health office, who was appointed a surgeon in the navy for duty on the steamer *Morrill*, has been granted indefinite leave of absence by the district commissioners.

PHYSICIANS LICENSED.—The following named physicians, having successfully passed the District examination, have been licensed to practice by the Board of Medical Supervisors: Drs. Jesse Lee Adams, Jr., John R. Atwell, George Kasper Baier, Wm. Mitchell Barnes, Levi C. Blake. Martha Clark Burritt, Wm. J. Bush, John A. Clark, Carl A. Clemons, Elmon A. A. Cook, Thomas Dowling, Jr., Wm. N. Fisher, A. F. Foy, Julia M. Green. Thomas A. Groover, Carl D. Haas, Stuart C. Johnson, Carl S. Keyser, Robert S. Lamb, W. R. Rives, Jr., Lewis Albert Walker, Charles S. White and Wm. E. Whitson.

ARMY APPOINTMENT.—Dr. William E. West of New York, resident physician at Columbia Hospital and late resident physician at the Central Dispensary and Emergency Hospital, has been appointed an Assistant-Surgeon, U. S. A., for duty at Porto Rico on the U. S. ship *Florida*.

WASHINGTON TRAINING SCHOOL FOR NURSES.—The Washington Training School for Nurses will hereafter be operated in conjunction with the Emergency and Alms House Hospitals. Congress has appropriated $6,000 for a nurses' home to be established at the Alms House Hospital grounds. Application for admission to the school for free instruction will be received at either institution, or by Dr. H. L. E. Johnson, Dean.

CENTRAL DISPENSARY AND EMERGENCY HOSPITAL.—The hospital has recently suffered great loss in the death of Dr. George Byrd Harrison, a member of the Board of Trustees, and one of the consulting staff. Dr. Harrison formerly had charge of the Department of General Disease. The medical staff called a special meeting and adopted appropriate resolutions of regret. Mrs. Phebe Hurst has donated a large building and grounds opposite the hospital to be used as a nurses' home for the institution. The gift was made through Dr. Burnett, who is having the necessary alterations made, when it will be formally transferred. Congress appropriated $2,000

for necessary repairs to the hospital and the work is being pushed with dispatch. In order to prevent overcrowding and imposition on the hospital, the Board has agreed to charge $15 a week to those able to pay for board. This is in line with the wishes of the Medical Association.

HEADQUARTERS FOR THE RED CROSS.—Dr. J. Ford Thompson has tendered the use of house 1310 G Street to the American National Red Cross Society as a headquarters for their committee. The offer has been accepted and the committee has raised the Red Cross flag over the building.

GIFT OF THE RED CROSS.—Surgeon-General Sternberg has acknowledged the receipt of $5000 from the supply committee of the Red Cross Society, which he will distribute. He will send $1000 to Colonel Forwood, chief surgeon at Montauk Port; $1000 to Colonel Harvard at Santiago; $1000 to Colonel Greenleaf, chief surgeon on General Miles' staff at Porto Rico; $1000 to Leutenant-Colonel Hoff, chief surgeon at Chickamauga; $500 to Major Hale, in charge of the U. S. Hospital at Ft. Thomas, Ky.; $500 to Major Fay, in charge of the U. S. Hospital at Ft. McPherson, Ga., all of which will be used for the purchase of delicacies for the sick and wounded soldiers who are arriving at these points.

ISOLATION HOSPITAL PLAN.—The district commissioners have appointed an additional architect to assist the inspector of buildings in the preparation of plans for the construction of an isolating building on the grounds of Providence Hospital for the reception of minor contagious diseases. The entire cost of the building is not to exceed $25,000.

HOSPITAL FOR FOUNDLINGS.—The superintendent of the Washington Hospital for Foundlings has submitted the yearly report to the district commissioners. The average number of children cared for this year has been larger than any year since its organization in 1887. The total number in hospital June 30, 1898, was forty-six, and forty-four received during the year. Thirteen were adopted by outsiders, nine died and four were transferred to other institutions. Mal-nutrition caused the greatest number of deaths. The total receipts of the year were $11,485.88; total expenditures, $7449.48, leaving a balance of $4036.40.

THE NEW MORGUE.—The coroner, Dr. Wm. P. Carr, reports that the new morgue for the District will shortly be completed. The morgue will not compare favorably with morgues of other large cities, but it will be a great improvement on the old shed in the rear of the station-house, previously known as the morgue. It is to be but a one-story building, with only two rooms, but will be fitted out with ice-boxes and other necessary paraphernalia to the extent of the parsimonious appropriation for that purpose.

GEORGETOWN UNIVERSITY HOSPITAL.—The Committee of Administration of the Georgetown University Hospital, consisting of Drs. J. T. Johnson, S. S. Adams, George T. Vaughn, Chas. Klineschmidt and Geo. M. Kober have announced, by circular, the formal opening of the hospital for the reception of patients. The free beds are for the benefit of indigent sick, but evidence of dependency must be furnished in accordance with the rules of the Medical Association of the District of Columbia before admission is granted. Seven rooms have been fitted up for the accommodation of pay patients, and the privilege of attending private patients in these rooms is extended to all members of the Medical Association and to surgeons of the Army and Navy and Marine Hospital service. The hospital will have in addition a well-equipped emergency and dispensary department.

Philadelphia.

WILL OF DR. PEPPER.—The will of the late Dr. Pepper was admitted to probate a few days ago. It was drawn up in February last and is very short, covering three typewritten pages. The actual value of the estate is unknown, personal property $100,000, and real estate $20,000, being only nominal items to comply with regulations concerning the fees of the register. It is known that Dr. Pepper carried heavy life insurance, and it is the prevailing belief that the entire estate will approximate a million dollars. Four executors were chosen: his widow, Mrs. Frances Pepper; his eldest son, Dr. William Pepper; his nephew, George Wharton Pepper, and his brother-in-law, James B. Leonard. After the provision that his brain be given to the anthropometric society and his body be cremated, the other provisions concern the real estate and personal property to be divided between his wife and three sons.

DR. PEPPER'S SUCCESSOR.—While discussion of Dr. Pepper's successor at the University of Pennsylvania may not be with good grace, since the time of his death has been so short, yet there is some speculation going on regarding the one upon whose shoulders the mantle of the distinguished teacher and clinician will fall. It appears that there are several being mentioned for the chair, but matters have not progressed far enough to say with any reasonable certainty as to who it will be. Of those mentioned, the names of Dr. William Osler and Dr. James Tyson seem to be most prominent. It will be remembered that Dr. Osler once occupied the chair of clinical medicine in the University of Pennsylvania, but subsequently accepted the chair which he now holds at the Johns Hopkins. Dr. James Tyson succeeded Dr. Osler as professor of clinical medicine at the University, and as he has filled this chair for the past four years, therefore becomes the logical successor of Dr. Pepper. Dr. Tyson has been connected with the University almost since he was graduated in 1863, first as lecturer in microscopy (1868) and in chemistry (1870), and later professor of microscopy and physiology in the Pennsylvania College of Dental Surgery. In 1874 he became lecturer on pathologic anatomy, and in 1889 succeeded Dr. Osler in the chair of clinical medicine. It is a question whether or not Dr. Osler would be willing to give up his chair at the Johns Hopkins to accept the chair at the University of Pennsylvania. Provost Harrison is reported as saying: "The trustees will not meet until October, and it is impossible to say with any accuracy who will be chosen as Dr. Pepper's successor. I would not want to discuss the question now."

SICK SOLDIERS OF PENNSYLVANIA.—It is proposed to bring back all those patients now ill with typhoid fever and other diseases, to Philadelphia, where they may be placed in suitable hospitals. The University Hospital, Episcopal Hospital, Pennsylvania Hospital, German Hospital and St. Ayers Hospital, have tendered their beds free of charge for the treatment of these cases. To bring the cases home a complete hospital train has been fitted up by the Pennsylvania Railroad Company, consisting of eight coaches, of which five were fitted up as hospital cars with a capacity of 100 patients, two Pullmans, to be used a dining and sleeping car by the physicians and nurses. The train will be in charge of Drs. Carl Freese of the German Hospital; Henry Sykes of the Episcopal Hospital; George Pfroenm of the Medico-Chirurgical Hospital, and Wilmer R. Batt of the City Council, with a full corps of nurses. The University of Pennsylvania claims priority over all others in tendering its services to the Government, Provost Harrison having written to Governor Hastings to that effect April 29.

YELLOW JACK AND PHILADELPHIA.—Aside from the precaution exercised by the city and State, the United States government is under existing laws taking precautions against the introduction of yellow fever into Philadelphia and other cities. A few days ago an inspecting party left this port on the "floating" quarantine station *Protector*, built for the purpose of preventing the entrance of yellow fever into this city. The *Protector* was taken to Fort Pond Bay, near Montauk Point, where it will remain under the charge of Dr. J. J. Kinyoun, bacteriologist of the Marine-Hospital Service. It is the intention to destroy all germs of yellow fever by thoroughly disinfecting the baggage of every soldier coming into port, also to

cause a reasonable detention of the person before mingling with those who have not been in infected areas. The vessel is built of steel, 150 feet long, over 20 feet beam and without propelling machinery. The cost of building of the vessel, apparatus, etc., was about $50,000.

PREVENTION OF TUBERCULOSIS.—Judging by an editorial which recently appeared in one of the lay papers here, the people are gradually learning that prevention is the best means of stamping out that disease. Frequently we hear it stated that tuberculosis is gradually becoming more prevalent in the larger cities, but this does not apply to Philadelphia. On the other hand, the statistics prove that deaths from that disease are gradually growing less. For instance, in 1892 deaths to 1000 persons living was 2.480; in 1895, 2.104, and in 1897, 1.966. This reduction in the number of deaths from tuberculosis in Philadelphia is attributed to the good work of the Pennsylvania Society for the Prevention of Tuberculosis, under the supervision of Dr. Flick, who located infected areas and infected houses throughout the city in 1892. The paper then speaks of ways of preventing the disease, such as through the inspection of food supplies, suppressing the habit of expectorating along the public highways, and taking the necessary precaution in those houses infected by tuberculosis. As a further method of suppressing the disease, it is recommended that a State sanitarium be built where these cases might be treated under the care of those most competent to render effectual aid.

PTOMAIN POISONING.—Two families are seriously ill with symptoms of ptomain poisoning derived from ham. One, the Cortledge family, is composed of the father, mother and two-year-old child; the other of two boys, aged 12 and 3 years, respectively, and a girl, aged 21 months. On the 15th both families ate boiled ham for supper (bought at the same store) and at 11 o'clock Mr. Cortledge and child were seized with violent abdominal pains, accompanied by vomiting. The mother was only slightly affected. It was subsequently learned that the other family were similarly affected, and two physicians pronounced the cases ptomain poisoning. The ham had been boiled by the manufacturer in this city, but those who had prepared the food for market could not be found. Samples of the food are being examined.

MORTALITY REPORT.—For the week ending at 12 o'clock, August 15, 443 deaths had been reported to the Board of Health. This shows a decrease of 41 over the previous week and of 37 over the number for the corresponding period of last year. Of the total number of deaths, 164 occurred in children under five years of age. The principal causes of death were: Nephritis, 18; cancer, 14; cholera infantum, 57; phthisis, 52; dysentery, 4; marasmus, 24; paralysis, 8; suicide, 2; whooping cough, 3; sunstroke, 9; heart disease, 20.

INFECTIOUS DISEASES.—This week: Diphtheria, 16 deaths and 45 cases; scarlet fever, 1 death and 10 cases; typhoid fever, 78 cases and 8 deaths. Last week: Diphtheria, 2 deaths and 49 cases; scarlet fever, 25 cases; typhoid fever, 13 deaths and 60 cases.

RESULT OF EXAMINATIONS.—The report of the examinations of the last meeting of the State Medical Board has just been published and the following results are tabulated:

	No. examined.	No. rejected.	Per cent. of rejections.	General average.
University of Pennsylvania	93	1	01.0	83.63
Medico-Chir. Col., Philadelphia	76	8	10.5	78.84
Woman's Medical Col., Phila.	26	1	03.9	78.68
Physicians and Surgeons, Baltimore	2	1	50.0	76.71
Jefferson Medical College	20	5	25.0	74.73
Western Pennsylvania	21	8	38.1	72.39
Miscellaneous	53	17	32.1	75.61
Total	316	47	14.9	78.77

The honors in this examination were held by the University of Pennsylvania and the Medico-Chirurgical College of Philadelphia, the University leading, as it generally does. The Medico-Chirurgical College, however, made a good average for the hospitals here and captured one-half of the positions on the resident staff of the Philadelphia Hospital.

INFECTED DURING A SURGICAL OPERATION.—Dr. Emil Dippell, chief resident surgeon at St. Timothy's Hospital, while assisting in an abdominal operation on July 4, inoculated himself with infected material, near the nail on the left hand. A localized abscess formed but was relieved by an operation. Subsequently another abscess developed in the left axilla and the Doctor can only be relieved by another operation.

ALMSHOUSE MAY BE ENLARGED.—The Board of Charities has recommended that councils appropriate $60,000 to be expended in repairing and otherwise making room for the care of patients now in this institution. At present there 1355 insane patients being treated in the buildings, which are greatly overcrowded.

ROUGH RIDERS AT THE UNIVERSITY HOSPITAL.—Alfred Roey, a Cuban, Percy Geyer of Colorado and Joseph Adkins of Colorado, were taken ill on their way from Tampa to Montauk Point, the quarantine station, recently, and were transferred to the University Hospital.

WILL INSPECT ARMY CAMPS.—Dr. E. O. Shakespeare of Philadelphia, member of the Sanitation Committee of the National Relief, has been commissioned to head a council, whose duty it shall be to inspect the various United States Army Camps and to better matters where unsanitary conditions are found. The National Relief Association recently issued an earnest appeal for funds to support its work, both in the States and in the field, with very good results. It is stated that this special board has been created to render void the necessity of red-tape methods at the different departments at Washington, and that matters will receive attention with much greater dispatch. Remembering that typhoid fever and preventable diseases have been on the increase from the time that soldiers were first put into camps, it seems just a little strange that some one was not sent to these places long ago; but as health matters are usually those which receive attention last, and since the war is over, these things may be now considered. When unsanitary conditions are found, Dr. Shakespeare will at once telegraph to Washington, and all measures likely to bring about disease will be corrected immediately.

PHILADELPHIA SOMEWHAT UNCLEAN.—During the recent inspection for any latent case of yellow fever which might have crept in unawares, certain districts along the Delaware were found in unsanitary condition. Chief Nuisance Inspector Kennedy presented his report to the Board of health a few days ago, stating that 3673 premises had been visited and rigorously inspected and that 704 nuisances were discovered.

EXPERT TESTIMONY.—Dr. Charles K. Mills of the University of Pennsylvania has been called to Lancaster, Pa., to give expert testimony in the Wireback murder trial.

PHILADELPHIA POLYCLINIC.—The fifteenth annual report of this institution shows that during the year 92,564 visits were made to the dispensary and 634 operations were performed under ether. Miscellaneous contributions during the year amounted to $7,500 and a State appropriation of $2,500 was received. The operating expenses were $41,824.23; receipts $41,152.88. To this must be added $10,725.46, being the amount of floating indebtedness on Jan. 1, 1897, which makes the total floating indebtedness of the institution on Dec. 31, 1897, $11,406.81.

THE PUBLIC SERVICE.

Memoranda Relating to Operations of the Medical Department, U.S.A.—MEDICAL OFFICERS.—The number of medical officers allowed by law is inadequate in times of peace. The total number allowed is one hundred and ninety-two. There are at present thirteen vacancies. The administration of the Surgeon-General's Office and the Army Medical Museum requires six. Eleven are on duty at medical supply depots and as chief surgeons of military departments. One is at the Soldier's Home; fifty six are at general hospitals, on hospital ships, and at garrisoned posts. Four have been disabled during the war by sickness. Five are on duty as chief surgeons of army corps. This leaves ninety-six medical officers available for duty with troops in the field. Of these, thirty-five have been appointed brigade surgeons of volunteers, and are distributed among the various army corps.

This deficiency in regular medical officers has made it necessary to employ nearly four hundred contract surgeons, and more are being employed every day. Most of these doctors from civil life are doing good service, and many of them are thoroughly well-equipped physicians and surgeons, with ample hospital experience; but it has been impossible to make a careful selection, owing to the great pressure of business in the Surgeon General's Office, and the urgency has been so great that it has not been practicable to have examining boards to pass upon their qualifications.

In addition to this, there have been appointed by the President, eight brigade surgeons with the rank of lieutenant-colonel, twenty-four division surgeons with the rank of major,

and sixty-five brigade surgeons; also three medical officers for each of the regiments of U. S. Infantry, Cavalry and Engineers. All volunteer regiments have three medical officers appointed by Governors of States.

General hospitals have been established at Key West, Fla., with a capacity of 755 beds; at Fort McPherson, Ga., 1050; Fort Thomas, Ky., 432; Chickamauga Park (Leiter Hospital), 255; Fortress Monroe, Va., 535; Fort Myer, Va., 308. In addition to this, several hundred sick and wounded soldiers have been placed in the Marine Hospital on Staten Island and in civil hospitals in New York and Brooklyn; also nearly two hundred in the civil hospitals in Charleston, and a smaller number in civil hospitals in various parts of the country.

The Hospital Train, which was equipped for service June 22, and consists of ten tourist sleepers and a dining car, has made repeated trips from Camp Thomas, Tampa and Fernandina, with sick, to the general hospitals at Fort McPherson and Fort Thomas, and has proved to be most useful.

The Hospital Ship *Relief* was purchased May 18, but owing to delays in preparing her for service, did not sail from New York until July 2. Four days later she arrived at Siboney with an ample supply of medical stores of all kinds and with sixteen doctors. She returned to New York with a load of wounded and was then dispatched to Porto Rico. She is now returning to New York with 260 sick and wounded soldiers.

The Hospital Ship *Olivette* went with the Fifth Army Corps from Tampa, Fla., to Santiago and brought a load of wounded from that port to New York. She returned to Santiago with supplies and is now en route to New York with 200 patients.

MEDICAL SUPPLIES.—When the troops were originally ordered from their respective posts into the field each regiment was required to take with it medical and surgical chests, litters and field supplies for three months. Afterward, medical supplies in ample quantities of all kinds were sent to Tampa for the Fifth Army Corps, about to sail for Cuba, and supplies have subsequently been sent to the several camps that were formed, wants being anticipated as far as possible and requisitions approved promptly on receipt.

Supplies for the army have been furnished from three medical supply depots: New York, St. Louis and San Francisco, the latter supplying very largely, by purchases on the Pacific Coast, the troops that went to Manila. St. Louis depot supplied the camps and regiments in the Mississippi Valley and the West; and the New York depot the camps and expeditions fitted out from the Atlantic Coast.

In addition to general medical supplies in great variety, 1204 medical and surgical chests have been issued, the surgical chests containing surgical instruments and dressings especially designed for the relief of wounded on the battlefield.

The extent of the demands upon the medical supply depots is indicated by the following figures, showing the issue of some of the more important articles.

First aid packets	No.	272,000
Hospital corps pouches	"	5,597
Orderly pouches	"	509
Pocket cases	"	952
Surgeon's field cases	"	369
Field operating cases	"	328
Medical and surgical chests	"	1,204
Litters	"	2,250
Litter slings	"	7,000
Cots and bedsteads, with bedding	"	18,185
Blankets, gray	"	29,950
Field desks	"	440
Quinin pills	"	7,300,000
Chloroform and ether	botts.	13,220
Gauze, sublimated, 1 meter pkgs	Pkgs.	100,000
Gauze, bandages, 3 sizes	No.	331,776

SICK AND WOUNDED.—At the present time, August 15, we have a full record of 40,620 cases of sickness and wounds that occurred among a mean strength of 154,028 men, during the months of May, June and July. As the average of the 3 months probably 6 per cent. of the troops were constantly sick. Reports from commands not yet represented in the statistics are expected daily.

HOSPITALS CORPS.—Immediately at the outbreak of the war the Hospital Corps consisted of one hundred hospital stewards, one hundred and three acting hospital stewards and five hundred and twenty privates, making a total of seven hundred and twenty three. The larger part of this number was ordered with the troops that left their respective stations to the camps of concentration and accompanied the regular regiments in the 5th Army Corps to Cuba, the smaller part being left behind at the various Army Posts, they being just enough to take care of the medical property.

Enlistments were at once ordered throughout the country of suitable men for the Hospital Corps, special attention being paid to enlisting nurses, pharmacists, cooks, drivers, mechanics, etc. A good many medical students and young physicians were also accepted.

By means of enlistments and afterward by transfers from volunteer regiments to the Hospital Corps a large number of men were obtained, and today there are in service by actual count five thousand and eighty-four. Probably a thousand are in service whose enlistment and transfer is not yet reported.

In addition to the members of the Hospital Corps enlisted for the purpose of taking care of our sick and wounded, we have employed 141 male nurses and 386 female nurses under contract.

CIRCULAR NO. 6.—

WAR DEPARTMENT, SURGEON-GENERAL'S OFFICE,
WASHINGTON, Aug. 12, 1898.

Chief surgeons of army corps, of divisions and of smaller independent commands are expected to make timely requisition for medical supplies. It must be remembered that some delay is often unavoidable in putting up supplies at the supply depots and in their transportation to the point at which they are needed. In an unexpected emergency telegraphic requisition must be made and supplies will be sent by express; but it must be remembered that this mode of transportation is very expensive and that failure to make requisition in advance of immediate needs entails unnecessary expense upon the Government. Division and field hospitals in which typhoid fever and other serious cases are treated should be liberally supplied with all articles necessary for the treatment and comfort of the sick. The field supply table applies only to mobile commands and division hospitals to accompany them on short notice.

GEO. M. STERNBERG,
Surgeon-General, U. S. Army.

CHANGE OF ADDRESS.

Balthache, P. H., from 1819 M. St. N. W. to 2115 S. St. N. W., Washington, D. C.
Clark, T. H., from 2720 Indiana Ave. to Chicago Policlinic, Chicago, Ill.
Dicken, H. W., from Ann Arbor to Petoskey, Mich.
Fisher, G. C., from 2601 Calumet Ave. to 291 S. Lincoln St., Chicago, Ill.
Hoffman, A., from Chicago, Ill., to Topinabee, Mich.
Hallman, J. H., from Hartford, Mo., to Cincinnati, Ohio.
Johnson, H. R., from Denver, Colo., to St. Johns, Ariz.
Kendall, H. B., from Wrightstown, Wis., to Freedom, Ohio.
Klebs, A. C., from 92 State St. to 4419 Indiana Ave., Chicago, Ill.
McKinnon, J. R., from 318 Chicago Ave. to 345 Rush St., Chicago, Ill.
MacAllister, S., from Rocky Ford to Eads, Colo.
Nagel, J. S., from 558 W. 59th St. to Harrison St. and Western Ave. Chicago, Ill.
Norris, W. L., from 2123 Ashland Ave. to National Union Bldg., Toledo, Ohio.
Preusel, J. E., from Chicago, Ill., to Robison, British Columbia Canada.
Rumsey, F. W., from 1013 17th Ave. to 1618 Pennsylvania Ave., Denver, Colo.
Somers, L. S., from Analomink to 3554 N. Broad St., Philadelphia, Pa.
Sisson, E. R., from Indianapolis to Maxwell, Ind.
Schmitt, G., from 120 Warren Ave. to 1208 W. Madison St., Chicago, Ill.
Whitwell, W. S., from San Francisco to San Mateo, Cal.

LETTERS RECEIVED.

Atkinson, W. B., Philadelphia, Pa.; Angear, J. J. M., Chicago, Ill.; American Medical Compend, Toledo, Ohio; Anderson, Winslow, San Francisco, Cal.; Applegate, J. C., Bridgton, N. J.
Barnstein, J. E., Manitowoc, Wis.; Bodenbender, N. W., Buffalo, N. Y.; Brant, A. C., Canton, Ohio.
Collison, F. J., Columbus, Ohio; Campbell, Chas., Petersburg, Pa.; Coleman, J., Washington, D. C.; Collins, G. S., Providence, R. I.
Edwards, Wm. M., Kalamazoo, Mich.
Friend, S. H., Milwaukee, Wis.; Frazier, W. S. & Co., Aurora, Ill.; Frick, Lewis, Hilbert, Wis.; Fitzwilliams, J. J., St Louis, Mo.; Fuller's Adv. Agency, C. H., New York, N. Y.; Fries Bros., New York, N. Y.
Goldspohn, A., Chicago, Ill.; Gregory, L. L., Chicago, Ill.; Greene, J. L., Dubuque, Iowa.
Hunter, C. H., Allison, Iowa; Hudson, G. W., Camden, Ark.; Hash, E. W., Chicago, Ill.; Hektoen, L., Chicago, Ill.; Hummel Adv. Agency, A. L. (2), New York, N. Y.
Johnson, H. L. E., Washington, D. C.; Johnston, C. H. Grand Rapids, Mich.
Kesch, J. S., Racine, Wis.; Kiernan, Jas. J., Chicago, Ill.; Klein, Henry, Chicago, Ill.
Leckie & Sayler, Chicago, Ill.
Maltine Mfg. Co., The, New York, N. Y.; Moreland, W. H., Manitou, Colo.; Murphy, A., Octavia, Neb.; McCready, L. R., Grand Rapids, Mich.; Mulford, H. K. Co., Philadelphia, Pa.; Merck & Co., New York, N. Y.; McFadden, W. G., Shelbyville, Ind.
Overstreet, G. M., Sylvania, Ga.
Palmer, F. A., Chicago, Ill.; Prince, L. H., Palmyra, Wis.; Parke, Davis & Co., Detroit, Mich.; Prichard, J. M., Yale, Ky.; Parsons, J. W., Portsmouth, N. H.; Paquin Laboratories, The Paul, St. Louis, Mo.; Powell, H. H., Cleveland, Ohio.
Rutledge, J. C., Detroit, Mich.
Shoemaker, J. V., Philadelphia, Pa.; Spivak, C. D., Denver, Colo.; Smith, Kline & French Co., Philadelphia, Pa.
Tuley, H. E., Louisville, Ky.; Treynor, V. L., Council Bluffs, Iowa; Thomas, S. J., Corey, Mich.
Union Adv. Agency, Louisville, Ky.
Woldert, E. A., Philadelphia, Pa., (2); Watson, W. S., Fishkill-on-Hudson, N. Y.; Weinberger, Dr., Vienna, Austria; Wathen, W. H., Louisville, Ky.; Whitford, Wm., Chicago, Ill.; Walker, J. E., Hornellsville, N. Y.; Walbright, G. W., Round Knob, Ill.
Yeager, J. A., Archbold, Ohio.